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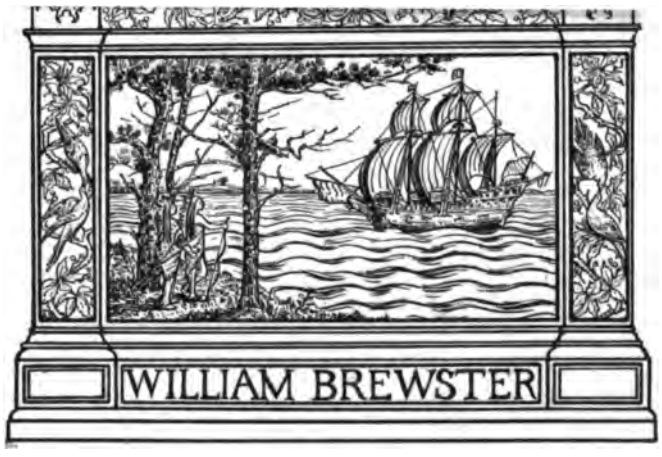

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NATURAL SCIENCE NEWS

VOL. II. No. 1-53. ALBION, N. Y., FEBRUARY 1, 1896. Weekly, $1.00 a Year

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 35 words. Notices over 35 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

***All* copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.**

FOR SALE OR EXCHANGE:- Eggs in sets or singles of this locality for sets of others. Send list when answering. W. H. CONNERY, 202½ New Houston St., Savannah. Ga.

I HAVE complete set of Insect Life to exchange for Coues' Key, Ridgway's Manual, Gosses' Birds of Kansas, Davies' Methods in Taxidermy or offers. H. G. HOSKIN, Burlington, Colo.

WANTED:—A second-hand copy of Maynard's Butterflies of New England states, Packard's Guide to the Study of Insects. Send condition and lowest cash price. J. S. KNOX, Silver Creek, N.Y.

FOSSIL CORALS CHEAP. Solid *Monticulipora mammulata;* branch rough, *Monticulipora ramosa;* branch smooth, *Monticulipora onecalli;* polyp, *Streptelasma corniculum.* Full geological data. All four postpaid 25c, any two 16c, one 10c, or all small (but fine) size, 1x1 in. only 15c. OTTO GRADY, Ludlow, Ky.

HIGH CLASS White Plymouth Rock fowls and eggs for hatching to exchange for fine sets of desirable eggs. W. J. B. WILLIAMS, Holland Patent, N. Y.

BOOKS! BOOKS! BOOKS!—Binding for Naturalists at reduced rates. Art works with special designed covers, Commercial Ruling and artistic printing on short notice. Try us. ADOLPH LAUX, Book-binder, Lockport, N. Y. 53-4t

WANTED:—Air brush, complete, in perfect order. Address H. FRYETT, 261 Chestnut St., E. Liverpool, Ohio.

WANTED:—Collections of eggs in sets or singles. Persons having such for sale cheap send list and lowest price. Southern eggs in sets to exchange in the summer. DR. M. T CLECKLY, 457 Greene St., Augusta, Ga. Fo 2t. 52-2t

TO EXCHANGE:—Minerals, fossils and insects for same not in my collection would prefer butterflies and moths from southern states. Send lists. JOHN S. KNOX, Silver Creek, N, Y.

NOTICE;—Fourteen varieties of tickets from the World's Fair given in exchange for each curiosity (Natural History) worth 2½c if in good condition. World's Fair chair canes at 35c each. C. FOX, 525 West 61st St., (Sta. O.) Chicago, Ill.

FOR 10 DAYS I offer 25c specimen of Labradorite at 11c prepaid, Shark's Tooth (not fossil) 5c each, 6 for 25c; Florida or Cuban Tree Snails regular price 25c, at 8c each; one of each for 15c. Address ERNEST H. SHORT, Albion, N. Y.

NOTICE:—I have a kitten (alcoholic specimen) with two distinct bodies joined to one head, 8 legs and 2 tails. Preserved perfectly. Price $2.00. Address ERNEST H. SHORT, Albion, N. Y.

SHARK'S Jaw, upper and lower sets of teeth all in; finely cleaned. Price $2.10 prepaid. ERNEST H. SHORT, Albion, N. Y.

FOR SALE OR EXCHANGE: Baush & Lomb Histological set of Microscope slides in mahogany case, 3 slides missing, cost $21; Abbe Condenser for B. L. microscope cost $8; Turn Table for making slides, cost $2.50; will exchange for U. S. or B. N. A. stamps not in my collection of equal value or will sell for $25, all new, never been used. Address W. H. COLBURN, Box 696, Lowell, Mass.

KANSAS EGGS:- Collection and duplicate worth about $18.00 for Album and Stamps, minerals, shells, fossils or offers. Fine lot for exchanging. CARL E. HOUDYSHEL, Holton, Kansas.

FOR SALE: I have a few singles of Oregon birds eggs with data which I wish to dispose of, and will sell cheap at the following prices: A. O. U. No's 214, 05; 221, 04; 263, 08; 309, 05; 413, 05; 447, 03; 455, 08; 467, 02; 498, 01; 500b, 04; 510, 01; 535b, 18; 76 a, 05. First come, first served. ROBT. W. HAINES, Baker City, Oregon.

FOR SALE: A fine collection of crystalized minerals, consisting of a variety of agates, carnelians, onyx and many unclassified; many polished, aggregating one and a half bushels. Cheap if all taken. FRIAR TERBUSH, Racine, Wis.

PUBLICATIONS wanted: During February I will allow the following prices for numbers named of the following publications in exchange. *The Auk* Vol. I (84) and II (85) any number and Vol. IV (87), No. 2 (April), 75 cts each; *Nidiologist*, Feb. '91 and April '91 at 10 cts each; Oologist for Jan. '95 at 5cts each.
FRANK H. LATTIN, Albion, N. Y.

FOR SALE or EXCHANGE.- Tarpon rod with two tips, Von Hote reel, Springfield rifle and bayonet. Best offer. Want 12 or 13 ga Hammerless for 10 ga. Ithaca Hammerless. H. I. BENEDICT 18 Main St., Lockport, N. Y. 53-2t

WANTED:—A 1 sets of 190, 214, 231, 264, 273, 300, 387, 388, 393, 394, 412, 413, 427 and many others in series. Offer sets 16, 30, 146, 49, 51, 127, 750, 758 &c. FRANK HARRIS, La Crescent, Minn.

SKINS and MOUNTED BIRDS, for sale or will give for good exchange in desirable sets or singles with complete data, or ornithological publications. Correspondence solicited. A. P. and D. J. SIMMONS, 611 Jacob St. Troy, N. Y. O.

FOR EXCHANGE. Parties having any of the following goods will do well to write me for particulars on good exchange. I can offer Coues' "Key," Packard's "Guide to the Study of Insects," "H. W. Bates on the River Amazon," Baty's "How to Hunt and Trap," "Shooting on the Wing," Ridgeway's "Manual," and Davie's "Methods in the Art of Taxidermy." Must be in good condition. Can use Bicycle, Winchester Shotgun or Oological Instruments. GUY K. BARNES, Strawberry Point, Iowa.

WANTED.- Fox squirrel in meat, head of antelope and mountain sheep and first class skins of herons. Exchange or cash if cheap. F. M. RICHARDS, Farmington, Maine.

FOR EXCHANGE. I have a large collection of sets and singles, some rare, which I will exchange for minerals, shells, curios, or sets Lists sent for yours. W. A. HORROM, Atlanta, Ill. 52-2t

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WANTED.—Perfect diurnal lepidoptera from the north-western, western and south western states, in papers. Offer fine exchanges of exotics. Entomological addresses especially desired. LEVI W. MENGEL, Reading, Pa. 52-2t.

WANTED.—Meteorites. New and undescribed ones especially desired. Good prices paid for complete "falls" or "finds." EDWIN E. HOWELL, 612, 17th St. N.W., Washington, D.C.

OPALS, Minerals, Cut Gems and Natural History Specimens. Will buy, sell or exchange. List for stamp. ROBERT BURNHAM, Dennis, Mass. 51-25t

TO EXCHANGE.—Specimens of Barite with Quartz Crystals, from Cheshire Co. for other minerals. HARRY LATHAM, 84 Camp St., New Britain, Conn. 52-2t

FOR SALE:—Chinese coins, 2c; Chinese lottery ticket, 2c; Chinese Newspaper, 3c; Japanese Oblong Coins, 5c; Fine Specimens of Calcareous Tufa, 10c; 3 different Cal. eggs, 5c; 5 correctly named Cal. shells, 10c; Sand Dollars, 4c; Chalcedonyx, 5c. All specimens sent postpaid. Send 2c for a list of fine sets of eggs and curios, shells, etc., I have for sale. W. H. HILLER, 147 W. 23d St., Los Angeles, Cal. 51-3t

WANTED.- Shot gun and World typewriter. Will give opals or minerals. Would like a few Columbian stamps in exchange. ROBERT BURNHAM, Dennis, Mass. 52-2t.

SOUTHERN Bird or mammal skins for others, medical books, mammals on all subjects, for skins or museum specimens. J. J. WIRZ, Taxidermist, Augusta, Ga. 52-2t

"AUKS" Wanted.—I will allow 30c each for any back number of the "*Auk*" you may have, if in good condition and sent prepaid. You to take your full pay in Bird Skins, Eggs, Shells (showy or scientific), Corals, Echinoderms, Fossils, Minerals, Indian Relics, Curios or Novelties as listed in the Premium List Supplement. I can also use on same terms Nos. 1 and 2 of NATURAL SCIENCE NEWS at 10c each and the following No's of the OOLOGIST at prices quoted: June, 1888, 25c; July-Aug., 1886, 15c; Jan.-Feb., 1887 or Dec., 1886 with same attached, 20c; June-Sept., 1887, 15c; Apr., 1889, 12c. All must be *complete, clean* and in good condition. I will also accept back No's of the *Ornithologist and Oologist* or *Nidiologist* any issue and in any quantity at 5c per copy on same terms. I can also use books on subjects pertaining to Natural History if in good condition and cheap, also A No. 1 sets of eggs with data at ⅓ "Standard" rates. Lists of books and eggs must be submitted for my selection or approval before sending. Address at once FRANK H. LATTIN, Albion, N. Y.

BOOKS. I want good clean second-hand copies of any Book which I offer for sale in my new (May issue) NATURALIST'S BULLETIN. Look over your old Books and send me a list of the ones you will "swap," stating lowest exchange price and what you can use for the same. FRANK H. LATTIN, Albion, N. Y.

TO EXCHANGE.— An International Type-Writer, almost new, cost $100, for best offer A. M. EDDY, Albion, N. Y.

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Stations.	A.M.	A.M.	A.M.	P.M.	P.M.	P.M
Rochester.....		8:00	10:30	2:20	5:35	10:00
Albion.....	7:00	9:10	11:35	3:25	6:50	11:06
Lockport.....	8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge..	8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.	9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....	8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....	6:25		11:00	1:30	5:00	5:50
Niagara Falls.	6:35	8:05	11:18	1:40		6:00
Susp. Bridge.	6:45	8:10	11:25	1:48		6:05
Lockport.....6:00	7:25	8:50	12:00	2:25	5:55	6:45
Albion.....6:50	8:15		1:00	3:25	6:45	7:50
Rochester.....8:00	9:20		2:03	4:35		9:00

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6. Cardium magnum, 3½ to 4 inches..... 6
7. " muricatum, 1½ inch single valves 1
8. " serratum, 1 to 2½ inch..... 3
9. Arca ponderosa, 2 to 3 inch..... 3
10. " noæ 1 to 4 inch..... 3
11. " floridanum, 2 to 2½ inch..... 3
12. Cytherea (callista) gigantea, 3 to 5 inch...10
13. " " maculata, 1 to 2½ inch 6
14. Natica duplicata, 1 to 3 inch..... 2
15. Chama Arcinella, 1 to 3 inch..... 5
16. Dosinia discus, 3 to 4 inch..... 5
17. Pholas costatus, 3 to 6 inch, double valve...15
18. Murex pomum, 1 to 3 inch..... 3
19. " salleanus, 1 to 3 inch..... 5
20. Pyrula papyratia, 3 to 5 inch..... 8
21. Pecten exasperatus, ½ to 3 inch, single..... 1
22. Conus Floridanus, ¾ to 1 inch..... 2
23. " proteus, 1 to 3 inch.....10
24. Pinna muricata, 4 to 10 inch..... 8
25. Lucina edentula, 1½ to 3 inch, single..... 2
26. Cancellaria carolinensis, 1 to 1½ inch..... 3
27. Oliva litterata, 1 to 2½..... 2
28. Anomia ephippium, 1 to 2½ inch..... 1
29. Melongena subcoronata, 2 to 6 inch..... 8
30. Cerithium eburnum, 1 to 1½ inch..... 3
31. Turritella, 1 to 1½ inch..... 2
32. Tellina, ½ inch..... 1
33. Marginella, ¼ inch..... 2
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Will be printed during the latter part of March and mailed not later than April 10th.

A copy will be mailed to every know Naturalist and Curio Collector in in America and to over 1000 selected **live** ones in Foreign countries.

ADVERTISING RATES will be advanced for this Easter edition as follows:

WANT, EXCHANGES and FOR SALE Notices will cost **50cts per 35 words**, 1c per each additional word, each figure counting as a word.

Coupons given with subscriptions will be honored in payment for notices in these columns in the Easter edition at 25cts each.

ADVERTISEMENTS will be taken at,

10 cents per nonpareil line. 12 lines per inch.
120 lines per column. 360 lines per page.

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NO DISCOUNTS will be allowed at this, less than nominal, rate. Hence a

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180 line (1½ page) advertisement will cost 18 00.
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Unless you have a satisfactory rating with either Dun's or Bradstreet's Commercial Agency, or can give me satisfactory Bank Reference, or have already had sufficient dealings with me to satisfy me of your financial reliability, the cash must accompany your order. If, however, you have either of the above three requirements and your order is for space amounting to over $2.00 I will neither require nor ask for a single cent 's pay until I prove to you

1st – By my printer's affidavit that I have issued 25,000 copies of the Easter edition of NATURAL SCIENCE NEWS.

2d – By my P. O. postage receipts that I have mailed at least 20,000 of the number.

Rates to regular advertisers WILL NOT BE ADVANCED. I will not, however, allow them to use more than the *average* number of lines which they agree to use in each issue for the entire year at this heavy loss to myself. Should they wish to increase the size of their regular advertisement, however, they can do so at the regular rate, for this issue, of 10cts per line.

First and Last Pages

Are always considered more desirable by many, although the Publisher knows that *every* page in this issue will be "religiously" read. However, if YOU consider the first or last page preferable and are willing to back your preference with the "price," I will sell the space on these pages as follows:

On the first page: Small "Want, Exchange and For Sale" advs. on FIRST PAGE will cost $1.00 per notice of 35 words or under. Exceeding 35 words, 3 cts per each additional word.

The Last Page will be sold to a single party or firm and will not be divided. My price for the same will be $50 net.

This Easter issue is sure to prove a "howling success" and it is my desire to have YOU "in it" and share in the fruits thereof.

Expecting to hear from **you** at an early date, providing you wish to share in the success of the issue, I remain, as ever

Faithfully,

FRANK H. LATTIN, Publisher, ALBION, N. Y.

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Natural Science News.

VOL. II. No. 3. ALBION, N. Y., FEBRUARY 15, 1896. Weekly, $1.00 a Year

Natural Science News.

A Weekly Journal Devoted to Natural History.

FRANK H. LATTIN, Editor and Publisher, ALBION, N. Y.

Correspondence and items of interest to the student of any of the various branches of the Natural Sciences solicited from all.

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Mammoth Cave.

(CONTINUED.)

Audubon's Avenue lies nearest the entrance. It is chiefly noted for its myriad of bats, and for the fact that it leads to an opening into which a miner dropped his lamp in 1812. Mat, the guide, found it thirty years afterward at the bottom of Mammoth Dome.

The Gothic Arcade is approached by a stairway from galleries beyond the saltpetre vats. The chapel in the Gothic Arcade has an arched roof supported by large stalagmitic columns, once beautiful but now sullied by sacrilegious smoke. I counted eight and found fragments of about thirty more. The growth was slow, requiring many centuries to develop their present dimensions. Three of the pillars are so grouped as to form two Gothic arches. Before this unique alter once stood a runaway bride, who had promised her anxious mother that she would "never marry any man on the face of the earth," She kept the letter of her promise, but was married after all to the man of her choice in this novel Gretna Green. We were fortunate in witnessing a similar scene, another of which is to be enacted this fall by a romantic young couple.

This avenue is about two miles long, and abounds in grotesque curiosities. It ends in Annette's Dome, where a cascade surprises one by bursting from the wall and then disappearing. Lake Purity, near by, is a shallow pool of such transparency that we did not suspect its existence until we walked into it.

Retracing our steps, we soon approach a region of pits and domes. The guide warns us of "danger on the right!" Beside our path yawns a chasm called the Side-saddle Pit, from the shape of a projecting rock, on which we seat ourselves and watch with fearful interest the rolls of oiled paper lighted by the guide and dropped into the abyss. Down they go in a fiery spiral, burning long enough to give us a view of its corrugated sides and a mass of blackened sticks and timbers a hundred feet below, remnants of a bridge once spanning the chasm.

The Bottomless Pit, a short distance beyond, is on a still grander scale, and extending, as it does, entirely across the avenue, was long an effectual bar to further progress. It is now spanned by a substantial bridge, which, for the sake of perfect safety, is renewed every year. Leaning over the handrails, we safely admired the blazing rolls as they winded to and fro, slowly sinking one hundred and seventy-five feet, lighting up the wrinkles and furrows made by the torrent's flow during untold ages. Shelby's Dome overhead is but a continuation of the great pit upward, with rich water-carved scrollwork and lavishly decorated panels, and here and there a sharp projection.

Turning abrubtly back, we follow the guide up and down narrow stairways and through a winding passage, till we find ourselves peering through a window-like aperture into profound darkness, that seems intensified by the monotonous sound of dripping water. The guide bids us remain where we are while he seeks a smaller and higher window beyond, through which he thrusts blue lights and blazing rolls, disclosing indescribable wonders to our gaze. This is Gorin's Dome. The floor far below us, about an acre in area, is covered, with water. The perpendicular walls, rising out of sight, are draped with these immense stalagmitic curtains, one above another, whose folds, which seem to be loosely floating, are bordered with fringes rich and heavy. These hangings, dight with figures rare and fantastic, fit for Plutonian halls, were woven in Nature's loom by crystal threads of running water.

We have now no choice of evils between Bunyan's Way, where one must stoop like a pilgrim burdened, and Buchanan's Way, where one must hold his head to one side, after the traditional habit of that eminent statesman. We choose the latter; and presently, by a circular opening over which hangs a threatening trap-door of rock, we are made acquainted with the famous and original Fat Man's Misery, of which all others are but base imitations. It is a serpentine channel, whose walls, eighteen inches apart, change direction eight times in one hundred and five yards; while the average distance from the sandy pathway to the ledge overhead is but five feet. The rocky sides are beautifully marked with waves and ripples, as if running water had been suddenly petrified. There seems to have been first a horizontal opening between two strata of limestone, by taking advantage of which this singular winding way was chiseled, from whose embrace we gladly emerge into Great Relief, where we can straighten our spines, and enjoy the luxury of a full breath. It was formerly supposed that if this passage were blocked up, escape from the regions beyond would be impossible. But not long ago the "Corkscrew" was discovered, an intricate web of fissures, by means of which a good climber, after mounting three ladders, crawling through narrow openings, and leaping from rock to rock, ascending thus amid the wildest confusion for one hundred and fifty feet, gains a landing at last, only a thousand yards from the entrance to the cave, and cuts off two or three miles of travel. Visitors generally come in the regular route and go out the Corkscrew, which, with a lively party, affords no end of amusement and a world of happy experiences which one recalls with pleasure years after. None should fail to come through the Corkscrew.

On entering River Hall we found our path skirting the edge of cliffs sixty feet high and one hundred feet long embracing the sullen waters of what is called the Dead Sea. Descending a flight of steps we came to a cascade, but a little further on, said to be a re-appearance of the waterfall at the entrance, suggesting the idea that the cave

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has doubled on its track. Passing the River Styx and Lake Lethe, we come to Echo River. Four boats await us on the banks. Each has seats on the gunwales for twenty passengers, while the guide stands in the bow and propels the primitive craft by a long paddle or by grasping projecting rocks. The river's width varies from twenty to two hundred feet, and its length is about three quarters of a mile.

The low arch soon rises to a height varying from ten to thirty feet, while the plummet shows a still greater depth below. The river can not properly be said to have any shore, for throughout its entire extent there are only one or two points where a foot-hold could be gained. Hence, the guide exercises the strictest authority in order to guard against accidents.

Along the water's edge are cavities, varying in size from a few inches to many feet, washed out by the stream. A quiet lady in black velvet led us in a sacred song. The concord of sweet sounds was surprisingly agreeable; but the tones followed each other too rapidly to secure full justice. A single aerial vibration given with energy, as by a pistol shot, rebounded from rock to rock. The din awakened by discordant sounds was frightful. On the other hand, when tne voice gave the tones of a full chord *seriatim*, they came back in a sweeping *arpeggio*. Flute-music produed charming reverberations. The finest vocal effect followed the utterance, as strongly and firmly as possible, of the key-note of that long vault, letting all other sounds meanwhile cease; the wonderful vibrations thus caused were prolonged for from fifteen to thirty seconds after the original tone had been delivered.

An extraordinary result was obtained by the guide's agitating the water vigorously with his broad paddle, and then seating himself in silence by my side. The first sound that broke the stillness was like the tinkling of silver bells. Larger and heavier bells then seemed to take up the strange melody, as the waves sought out the cavities in the rock. And then it appeared as if all chimes of all cathedrals had conspired to raise a tempest of sweet sounds. They then died away to utter silence. We still sat in expectation. Lo, as if from some deep recess that had been hitherto forgotten, came a tone tender and profound; after which, like gentle memories, were re-awakened all the mellow sounds that had gone before, until River Hall rang again.

This concert was prolonged for several minutes, until the agitation of the waters had wholly subsided. Those who try their own voices are pleased to have the hollow wall faithfully give back every shout and song, whimsical cry or merry peal; but the nymphs of Echo River reserve their choicest harmonies for those who are willing in silence to listen to the voice of many waters.

Continuing our journey by way of Silliman's Avenue and El Ghor, picturesque passes where many fantastic objects are pointed out, we arrive at Hebe's Spring. Here, by climbing a ladder and crawling through a hole in the roof, we are admitted to an upper tier of caverns. The guide ignites blue fire, and we are surprised to find ourselves in a vineyard! Countless nodules and globules simulate clusters on clusters of luscious grapes, burdening hundreds of boughs, and gleaming with parti-colored tints through the dripping dew.

Washington Hall is but a smoke-stained lunch-room. The ceiling of a room near by is dotted with semi-spherical masses of snowy gypsum, each of which is from two to ten inches in diameter, looking like a snow-ball hurled against the wall and sticking there. Snow-ball Room is a fitting vestibule to the treasure-house of alabaster brilliants beyond it, where we tarry long with ever-increasing delight.

What words can picture forth the beauty of Cleveland's Cabinet? Wyandot and other caverns may have galleries like it in kind, but none to be compared with it either in extent or symmetry. We loiter beneath spotless arches of fifty feet span, where the fancy is at once enlivened and bewildered by a mimicry of every flower that grows in the garden, forest, or prairie, from the modest daisy to the flaunting helianthus.

Beyond a rocky hill and a dismal gorge lies Croghhan's Hall, and a pit called the Maelstrom, which ends the Cave so far as it has been explored in this direction.

Tourists have usually been hurried through by two routes, one requiring four hours and the other nine, and both covering about twenty-eight miles of travel in and out. A season ticket is now for sale allowing parties a more leisurely exploration, and good for entrance for thirty days.

On the whole, Mammoth Cave greatly exceeded, though differing from our expectations. We were grateful, however, for impressions received and memories retained of wonderful scenes and strange adventures. Feelings akin to friendship had sprung up within us for Mammoth Cave; and it was with positive regret that we finally turned away from the fern-fringed chasm, lying there in the soft moonlight, where the sparkling cascade throws pearly drops from the mossy ridge, and spreads its mist like a silver veil.

The White Elephant Kedah.

White elephants have for many years been an object of veneration in Burma and Siam. The fortunate individual who found a white elephant in his possession sold it to the king of one of those countries, obtaining therefor, it is said, certain titles to nobility, exemption from taxation and from capital punishment and a sum of money determined, it is said, in some cases, as the amount of silver coin which he could push along a smooth surface with his little finger. The largest sum ever obtained, it is said, was won by a Chinaman, who assiduously practiced pushing weights, strengthening his hand so as to be able to push along the largest amount of silver possible. Some years ago a partially white elephant was in the Barnum & Bailey show, which animal perished in the Bridgeport fire. There has been recently imported into this city, by the firm of DeSilva and Gaylord, a perfect example of the white elephant.

The sacred beast is recognized by certain signs. In addition to the light color of his skin, he was required to have five white hoofs on each foot, he had to show a pink color about the ears, and the hair about the lip was required to be light in color, and the tail to have no tuft of hair upon its end.

The animal was caught wild near Palembang, in Southeastern Sumatra, on June 17, 1895, and is supposed to be about eighteen months old. Its height is three feet nine inches and it weighs about five hundred pounds. The little creature is perfectly docile and content in its captivity and allows itself to be fondeled and played with at liberty. It has been named Kedah. In Sumatra the value of the white elephant is not generally known, and the captors of this animal were not aware that they could have

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sold it to the King of Siam. Had it been found by those having knowledge of this fact, it would probably never have left the East. It is really the only elephant which truthfully can be called white ever brought to this country. Europe has never possessed one of any kind.

White elephants are now only to be seen within the enclosure of the King's palace at Bangkok, Siam. There are four there now, which animals, owing to the peculiar religious tenents of the Buddists' faith, are absolutely unpurchaseable. The doctrine of the transmigration of souls teaches that these animals are inhabited by the souls of Siamese kings.

The white elephant which was with the Barnum & Bailey show was procured with great difficulty by Mr. Gaylord, in Burma. The present animal of the Sumatran variety, an absolutely perfect example of the elephant albino, is one of the most interesting and curious zoological specimens ever brought to this country. The color is a very light gray, and the skin is peculiarly soft and delicate. About the end of the trunk and about the ears it runs into a light pink tint, and the hoofs are a beautiful cream white. The animal is male, and is expected to attain a height of seven to eight feet.

Its importer, Mr. J. B. Gaylord, has spent many years in collecting animals for exhibition, having in the course of his experience gone twenty-two times arouud the globe. He brought Kedah home by sea through the Suez Canal, the journey taking fifty days. Kedah arrived rather thin and worn after its trip, but is now in prime condition and bids fair to attain a good old age.—*Scientific American.*

The Fragrant Shield Fern.

I had another gala day this season when with the help of a friend I found the last of our New England ferns—Dryopteris fragrans. I have spent a good many hours among our cliffs during these ten years past, hunting for this little fellow, and had given up expecting to find it. Several times I had thought it found, but it would prove to be only the Woodsia Ilvensis. There could be no possible question this time as to its identity. It was way up on the bare, dry face of the cliff, far out of reach except by some sort of a ladder. But it was so unlike any other species, with its dry, curling, snuff colored fronds of last year, that I knew it was the one I wanted. We found more of it later that was accessible. I think that the professors who have written our description of it have never found it for themselves. Its chief characteristics are: 1st—that peculiar appearance of the old fronds; you couldn't curl them more gracefully than they appear dropping over the ledge of rocks. 2nd—the glutinous fronds, they cannot be taken from the paper until they are dry and grass and leaves adhere to them. 3rd—its peculiar fragrance. Gray says "aromatic;" that doesn't half tell the story. I gathered a clump of it on the cliff and dropped it down in my pocket handkerchief, and the perfume lasted for days. I think it is like new-mown hay composed largely of sweet briar rose leaves. Its fragrance alone makes it our best fern. It grows on the dryest cliff sides, where everything else would be scorched by the sun's heat; not "especially near water-falls," as Gray's Manual says. Look for a place where there is a bare cliff, overhanging a little perhaps, so that the rain cannot reach it, and up above all the trees, so that it can have no shade at all, and if you find a fern there, test it by the perfume, its stickiness and its beautiful brown curls.—*James A. Bates, Randolph, Vt., in The Fern Bulletin.*

Peculiar Nesting Sites.

Sometimes birds select such unusual sites to build their nests that we may wonder why they do so when there are plenty of natural sites in the locality. There is a large deep gulley which runs at right angles from Keuka Lake and in some parts of this gulley are perpendicular banks of slatestone but mostly covered with large coniferous trees.

Projecting from one of these bare slatestone banks there is a narrow ledge or shelf of rocks which is about 100 feet from bottom of valley and 35 feet from top. Above this ledge the bank is covered with moss, ferns and shrubs, while below it is bare and concave.

It was in the middle of May, 1889, that I first noticed this shelf, and out of curiosity I let myself down upon it by holding onto some firm roots which protruded from the bank, when lo! I discovered that I had dropped into a Great Horned Owl's nest and there sat a young Donwy Bubo trying his best to stare me out of countenance. No attempt had been made to build a nest—merely a depression in the loose pieces of slatestone. In a crevice near the nest there was stuffed a Ruffed Grouse which was fresh and about half eaten.

Another peculiar site was selected by a pair of Chimney Swifts down in a well 10 feet from top of curbing and the nest being glued onto a smooth hard stone and contained a family of five. I removed the curb which was a box affair about 3 feet square and went down to examine the nest. While doing so the parents made frantic efforts to reach their dusky children by diving with the speed of an arrow into the misplaced curb. I afterwards learned that the young birds got out safely. Date of finding nest July 14, 1895.

Again on July 25, 1895, I discovered another nest of Chimney Swift in the garret of flour mill where noisy cog wheels and rumbling machinery keep up an incessant racket. Yet these plucky birds glued their nest to the board siding and reared a family of five. How they ever darted into the small opening in the peak of mill without getting caught in belts and cog wheels is a mystery to me. It may be of interest to add that although the ever-present English Sparrow enters this same hole to feed on the grain scattered about. They did not disturb the Swifts in any manner. Nor have the English Sparrows ever attempted to build nests in the garret although there are thousands of them here.

C. F. Stone,
Branchport, N. Y.

Field Days in the Foothills.

August 3d. Despite our intention of oeing up early this morning, it was 7 o'clock when I awoke. M. was still in the arms of "Morpheus," but with a little gentle persuasion he arose, and after performing our "toilet" at a small stream that ran past the "shack" we swallowed a hasty breakfast and after seeing to the horse and making everything ready we left for a day's collecting.

We followed a cattle trail for about two miles, observing no bird life of any amount, with the exception of several White-crowned Sparrows which no doubt breed in that locality.

After a little hard climbing we arrived at the top of a hill and the scene that burst upon us was glorious, a regular panorama of hills and valleys with a creek winding north and south and fully 200 feet below us.

It did not take us very long to scramble to the bottom of the hill and cross the creek, in which I noticed the trout rising hungrily at the flies. M. fortunately had some fishing tackle and we resolved to have some fresh fish for supper on our return journey.

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Several Sparrow Hawks were screeching noisily and we passed through a patch of pine bush I noticed several Red Squirrels. I shot a pair to preserve and found them smaller and darker than the eastern variety.

We now commenced to climb a big hill, a sort of miniature mountain, at the top of which I thought we might find the Grouse. The first half of the way was pretty "tough," scrambling over logs and through brushwood; but as we neared the top the vegetation grew scantier and rocks were plentifully strewn around. We arrived at the top thoroughly "blown" and after a rest commenced to hunt the ridge. I had not gone far before M. shouted to me to come and look a some feathers which he picked up. There were two of them, a primary and tail feather, belonging without a doubt to the bird we were seeking, the "Blue Grouse." This was encouraging and we started to hunt with renewed hope, fingers on the trigger, should a bird jump suddenly.

To make a long story short, we hunted the ridge from end to end but never saw a bird. Several more feathers were found mostly in raspberry patches which seem to be the only vegetation that thrives amongst the stones. I have no doubt the birds feed on the berries in the early morning and spend the middle of the day in the valleys, according to the time and locality we secured our specimens. We commenced to descend the hill with the prospects for Grouse as far away as ever, M solemnly vowing that he would bring the dogs another time "Wolf Poison" or not.

Rocky Mountain Chipmunks were numerous and I collected a good series. They are like the Red Squirrel, smaller and much darker in color than the eastern variety. We reached the bottom of the hill in much quicker time than it took to ascend and began to make our way across the valley to the creek.

I was walking in front of M. with the hammers of my gun down and not giving much thought to the Blue Grouse, when suddenly there was a "whir" like a sky rocket almost under my feet and a bird started away at a great pace. By the time I had pulled myself together the bird was a long way off, but M. yelled at me to shoot and as a sort of forlorn hope I pulled the trigger and was agreeably surprised to see him turn over and drop in the grass. Following the report of my gun there was a much more decided "whir" and a much larger bird flushed within easy range and was "bagged" without any difficulty. The former was a young bird of the year, well fledged and strong on the wing. The latter was the female and they were both eventually identified as *D. obscura Richardsoni*. As I expected we were amongst a brood. I cautioned M. to look out and we quartered the ground carefully. However, only one more bird was flushed and I gloriously missed him. It took us quite 20 minutes to find the first bird in the long grass, another reason why we should have had the dogs M. suggested.

After attending to these two specimens we started again in much better spirits and fully on the alert for any more Grouse. However we arrived at the creek without seeing another feather and set about securing some trout for supper. We quickly rigged up some tackle that would have made me blush in more civilized regions, and in about as many minutes we hauled out 23 fish. I doubt if the stream had ever been fished in before; at any rate the fish simply fought for the bait—we used grasshoppers—and as soon as it touched the water three or four fish would rush at it savagely. It was the best bit of fishing I have ever had. The fish were all mountain trout from 3 to 8 ounces in weight and splendid eating.

We arrived at the "Shack" about 7 p. m., thoroughly tired but were satisfied with our two Grouse, and after a good supper of trout we turned in for the night.

August 4. It was 8 a. m. before we awoke this morning and as I had plenty to do for some hours in preparing the specimens obtained on the previous day, M. said he would go out alone promising to be back by noon. It was just 5 p. m. when M. returned. He had secured another female *Richardsonii* which he informed me had jumped up on a log and sat looking at him until he threw a stick at her when she flew off. During the absence of M. I had prepared a dish which it would tax even Delmonico to procure, i. e., Richardson's Grouse Pie, to which we did ample justice.

As we sat outside the "shack" enjoying a pipe just as the "shades of night were falling fast" a Great Horned Owl came and perched on a tree right overhead. I rose to get the gun and in so doing cracked a stick and "Bubo" vanished like a ghost. Nighthawks were numerous and I presume they breed on the ridges.

Tomorrow was to be the last day, so we turned in for another good night's rest.

August 5. We were up by 6 a. m. this morning and after refreshing the inner man we started to explore the pine bush behind the "shack." We had not gone fifty yards before I saw (or rather heard and then saw) four Canada Jays. They proved to be very wild but eventually M. got within range and brought one down with a broken wing which commenced a tremendous outcry. The remaining three would not leave their fallen mate, and we secured the four easily. Three were birds of the year and the other a mature male.

A Horned Owl was the next to attract our attention and it was whilst in pursuit of this bird, that I secured the prize of the day. I was cautiously approaching to where "Bubo" had flown when I heard a tapping above my head and upon carelessly glancing up was astonished to see a little black bird with white bars on the back vigorously digging into a rotten branch. A small charge of No. 12 brought it tumbling down and it proved to be a female American Three-toed Woodpecker (*P. Americanus*). I had never thought of finding this species so far south in summer and presume that they breed in the locality.

Deer tracks were very numerous and also quite a few bear signs were seen. The grizzley is found in this country but fortunately we did not come across one. Nothing more of importance was secured. We collected specimens of Olive-sided Flycatcher, Red Squirrel, and Rocky Mountain Chipmunk. Several Horned Owls were seen but managed to keep out of gunshot.

We returned to the "shack" by noon and after dinner packed up our effects and prepared to leave. Upon proceeding to bring in our horse "Billy" I found him amongst a cloud of Bulldogs as the large horse flies are called. They are a pest to horses and cattle in the summer months but fortunately do not take so much interest in the human race, although I have often been bitten by them and they make the blood flow

After carefully packing our effects and the specimens we fastened up the door of the "shack," nailed up the window and then taking our seats in the buckboard we bade adieu to one of the prettiest localities I have ever visited.

We reached the "ranchers'" place again before sunset and stayed there over night, resuming our journey the following morning, arriving in Calgary at 3 o'clock in the afternoon. Just outside the town I shot a splendid Ferrugineous Buzzard in the black (melanistic) plumage and another one in the normal phase. These birds are easily shot out of a buckboard, but it is almost useless to try and approach them on foot. I also secured specimens of Say's Phœbe and the Arkansas Kingbird on the return journey. Both are fairly common around Calgary.

Clyde L. Smith of Oblong, Ill., writes that on the 13th of September he collected a set of two eggs of the Mourning Dove, incubation advanced about one-third.

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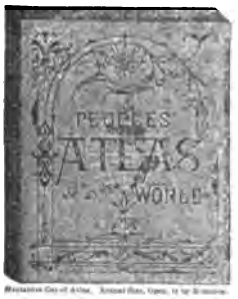

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Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 25 words. Notices over 25 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

All copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.

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Rochester.....			8:00	10:30	2:20	5:35	10:00
Albion		7:00	9:10	11:35	3:25	6:50	11:06
Lockport.....		8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge ..		8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.		9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....		8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....		6:25		11:00	1:30	5:00	5:5(
Niagara Falls.		6:33	8:05	11:18	1:40		6:00
Susp. Bridge .		6:45	8:10	11:23	1:48		6:05
Lockport.....	6:00	7:25	8:50	12:00	2:25	5:55	6:45
Albion.....	6:50	8:15		1:00	3:25	6:45	7:50
Rochester.....	8:00	9:20		2:03	4:35		9:00

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VOL. II. No. 4. ALBION, N. Y., FEBRUARY 44, 1896. Weekly, $1.00 a Year

Natural Science News.

A Weekly Journal Devoted to Natural History.

FRANK H. LATTIN, Editor and Publisher, ALBION, N. Y.

Correspondence and items of interest to the student of any of the various branches of the Natural Sciences solicited from all.

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Infusorial Earth and its Uses.

It is one of the paradoxes of Nature that the smallest creatures contribute most to the structure of the earth. The higher forms of life are barely traceable in the rocky strata; the lowest make up the bulk of vast formations, thousands of miles in area, thousands of feet in depth. The gigantic labors of the minute but multitudinous coral polyps, are proverbial: but these are surpassed by the remains of still more microscopic creatures which swarm in all waters, arctic as well as tropical, fresh as well as salt, and whose cast-off shells fall like a ceaseless rain of solid matter on every part of the ocean's bed, on the beds of every inland, sea and lake, every river, and marsh, and roadside pool. And minute though they be, the bulk of matter they contribute to the earth's strata every year is quite incalculable. The celebrated microscopist Ehrenberg, the first to realize their importance, estimated that in the single harbor of Wismar, in the Baltic Sea, as much as eighteen thousand cubic feet of these silicious organisms accumulated annually. The deep sea explorers of the Challenger expedition found them everywhere above the depth of two thousand fathoms; and below that their insoluble remnants made up thousands of square units of "red clay" deposits, apparently the stuff from which the azoic bases of the continents were formed. The limestones and chalks derived from calcareous infusoria are still more abundant and important: and by no means insignificant are the unconsolidated silicious strata of modern origin, to which the name infusorial earth has been applied. The stratum at Bilin in Bohemia, in which Ehrenberg found the enormous number of forty thousand millions of individuals to the square inch, is eighteen feet thick, and extends over a large area. At Lunenberg is another deposit, nearly twenty-eight feet thick; and less important strata are found in other parts of Germany and throughout Europe. In Lapland and Sweden it constitutes the well known "mountain meal," used to swell the bulk of certain foods. Many deposits of considerable magnitude are known in England, and the Irish beds are celebrated, especialty those of the county of Down. Africa for a long time monopolized the supply for use in the arts, and furnished the familiar name Tripoli. The material is now abundantly supplied by other parts of the African continent, by Asia, Australia, New Zealand, South America, our own country—indeed every part of the world. In South America, the natives count it in some parts an essential portion of their diet, using it as food mixed with fat. Along the Amazon, beds of this useful earth are numerous; and since the organisms which produce it are universally distributed, the deposits of it will doubtless be found more or less abundant everywhere when sought for. Such at any rate appears to be the case in this country. The extensive deposit at Drakeville, N. J., which so conveniently supplies a demand originally met by material imported from Germany, for the manufacture of dynamite, is a case in point. Perhaps the most extensive deposit in this country is the one underlying the city of Richmond, Va., a deposit which Professor Rogers traced from a point on Chespeake Bay, in Maryland, to beyond Petersburg, Va., where it is thirty feet thick. Beds of similar character have been found in California, Oregon and elsewhere on the Pacific Coast: and smaller deposits occur at West Point, at Wrentham and Andover, Mass., and in Connecticut and Rhode Island.

Infusorial earth, or tripoli, is best known as a polishing powder for gold, silver, etc., for which purpose it has no rival. Mention has already been made of its use in the manufacture of blasting powders, in which it serves the useful purpose of holding the explosive nitroglycerin. But these will ultimately be counted among the least of its uses. Already it plays an important part in the manufacture cements and artificial stones, especially in Ransome's process. Combined with carbonate of magnesia, it forms the excellent cement known in Germany as albolite. With borate of lime, it forms a valuable glazing for furnaces, pottery, etc., and is found very useful as an enamel for iron and slate. Fused with borate of magnesia, it forms a beautiful and durable porcelain which can be cast and even blown like glass. A multitude of minor uses have been suggested, and many more will no doubt follow as our artisans become acquainted with its properties. Its lightness, indestructability by fire, and slowness of heat conduction are qualities of very great value. Bricks of it, with a little clay, are nearly as strong as common bricks, yet so light as to float on water. At the same time they are infusible, and such poor conductors of heat that they may be held at one end while the other is heated to redness. As an experiment, an Italian engineer constructed the powder magazine of a wooden vessel with such bricks, and when set on fire the vessel burned till she sank, without exploding the powder. The lightness of such fireproof bricks makes them specially valuable for such uses. They have also been used to advantage in the construction of reverberatory furnaces, pyrometers, etc. The heat-resisting quality of infusorial earth makes it not less useful as a protection to ice bins, ale cellars, etc., and as a lining for fireproof safes and the like, for which purposes it is rivaled only by asbestos. Agriculture furnishes another promising field for the use of infusorial earth. Professor Wilson, who has the honor of discovering the use made of this form of silica by plants, pronounces the application of it to fertilizing purposes the most important adaptation of matter for the reproduction of vegetation that has even been discovered. There can be no question of the importance of such assimilable silica to soils like those of Bermuda, where the silicious element is nearly if not entirely wanting.—*Scientific American.*

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The Scorpions of Egypt.

That indefatigable naturalist, Mr. Frank Buckland, gives the following account of a fight between a mouse and a scorpion:

"In February, 1868, I received a box by post containing two live scorpions, kindly presented to me by my friend, the late lamented J. Keast Lord, who had caught them under a stone at Heliopolis, in Egypt. Wishing to test the power of the scorpion's sting, I got a glass globe and turned in one of the scorpions. A mouse having been caught in the trap, I thought I might just as well let the scorpion try his powers upon it as the cat. I therefore shook the mouse into the glass with the scorpion. The scorpion, an average-sized one, immediately resisted the affront; and the mouse, who had never evidently seen a scorpion before, did not know whether he was his friend or his enemy. Not liking the continued jumping of the mouse, the scorpion twisted and began brandishing about his sting. The mouse shortly crossed his path. The scorpion instantly lunged his sting into him. This challenge instantly woke up the mouse, who began to jump up and down like a jack in the box. When he became quiet, the scorpion again attacked the enemy, with his claws extended like the pictures of the scorpion in the zodiac. He made another shot at the mouse, but missed him. I then called 'Time!' to give both combatants a rest. When the mouse had got his wind, I stirred up the scorpion once more, and, as 'the fancy' say, 'he came up smiling.' The mouse during the interval had evidently made up his mind that he would have to fight, and not strike his colors to a scorpion as he would to a cat. When, therefore, the scorpion came within range, the mouse gave a squeak and bit him on the back; the scorpion at the same moment planted his sting well between the mouse's ears on the top of his head. The scorpion then tried to retreat, but could not, for one foot had got entangled in the fur of the mouse. The mouse and scorpion then closed, and rolled over each other like two cats fighting, the scorpion continually stabbing the mouse with his sting, his tail going with the velocity of a needle in a sewing machine. When the scorpion got tired, the mouse got hold of his tail with his teeth and gave it a sharp nip. The mouse seized the opportunity, and immediately bit off two of the scorpion's side legs. He then retired, and began to wash his face. I had expected, of course, that the poison of the scorpion would have killed the mouse, but he didn't seem a bit the worse for it. When I examined him the next morning he was quite lively and well; and had nearly eaten up the whole of the scorpion for his breakfast. Of course I rewarded the mouse for his plucky conduct by giving him some milk, and by letting him go in a place where it was not likely the cat would find him.

"Scorpions are inhabitants of hot climates; they live among stones, logs of woods, etc., in such places, in fact, as those inhabited in England by wood lice and centipedes, etc. They are said to attain the length of twelve inches in Batavia; and along the Gold Coast, I have heard (but hardly believe it) they are found as a good sized lobster; the general size is about three inches long. It not unfrequently happens that scorpions are brought to England in timber ships, etc., and I have received more than one scorpion thus brought over."

The Amœba.

The amœba is one of those singular forms of animal life which seemingly occupy the extreme boundary between animal and vegetable life. In an article attempting to set forth the distinguishing points between animal and vegetable life, the *London Quarterly Review* gives the following description of this most remarkable of living creatures:

"But perhaps the clearest instance of the uselessness of attempting to make the possession of a stomach a distinctive feature of animal nature is shown by the history of a group of creatures, of which the well-known and common amœba may be taken as a type. In these there can be no question of definition, for in no sense whatever can they be said to possess a permanent stomach.

"The amœba has a just claim to the title of animal, for its affinities with the foraminifera are clear; and no one would deny that these creatures, with their exquisitely beautiful shells, are animals. Nor is this position shaken by the fact that the life history of the amœba can at present be said to be fully made out. Yet the amœba has no stomach, possesses indeed no organs at all, unless we consider its so-called nucleus as one; and there are closely allied forms in which even this is absent. Conceive of a minute drop of transparent jelly, so small as to be invisible without the help of a microscope, a drop of jelly sprinkled and studded with a dust of opaque granules, sometimes hiding in its midst a more solid rounded body or kernel called the nucleus, and perhaps with the outer rind a little different from the internal mass. Conceive further of this amœba as of no constant shape, but like the Empusa shifting, as we look upon it, from one form into another. At one moment it is like a star with straggling unequal limbs, at another club-shaped; now it is a rounded square, soon it will be the image of an hour-glass. None of these changes can be referred to currents in the water in which it lives, or to any other forces acting directly upon it from without. It seems to have within it some inner spring, an inborn power of flowing, whereby this part of it or that moves in this or that direction. And not only do its parts thus shift and change in form, but through their changes the whole body moves from place to place. As we begin to watch it, for instance, at the moment when it is in what may be called its rounded phase, a little promberance may be seen starting out on one side. Speedily the little knob swells, lengthens, flows into a long process. The process thickens, faint streams of granules indicating in which way the currents of the unseen molecules are setting. The substance of the body surges into the process; and as the latter widens and grows thick, the former shrinks and grows small. At last the whole body has flowed into the process; where the body was there is now nothing, and, where the process reached to, the whole body now is. The creature has moved, has flowed from one spot into another. Here, then, we have movement without muscles, locomotion without any special organs of locomotion. We have also feeling without nerves or organs of sense, for if a process such as we have described, while flowing out, meet with any obnoxious body, it will shrink back and stop in its work. And the whole body, terrified by some potent shock, will then gather itself up into a ball. As it moves without muscles, so also does it eat without a stomach. Meeting in its sluggish travels with

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some delicious morsel (and diatoms are its frequent food) it pours itself over its meal, and coalescing at all points around it, thus swallows its food by fluxion. To use a homely illustration it is much as if a piece of living mobile dough were to creep around an apple and to knead itself together into a continuous envelope in to form an apple dumpling. Watching the food thus enveloped by the gelatinous substance of the amœba we see it grow fainter and fainter as its nutritious constituents become dissolved by the corrosive action of the same transparent but chemically active jelly; and when all the goodness has been got out of the meal the body of the eater flows away from the indigestible remains in just the same way that it flowed around the original morsel.

"We have in this creature, then, eating without a stomach, moving without muscles and without limbs, feeling without nerves, and, we may add, breathing without lungs, and nutrition without blood. The amœba is a being of no constant outline, of no fixed shape, which changes its form according to its moods and its needs, and turns its outside into its inside whenever it pleases, which is without organs, without tissues, without unlike parts, a mere speck of living matter all alike all over. And yet in the midst of this simplicity it enjoys all the fundamental powers and fulfills all the essential duties of an animal body, and is, moreover, bound by chains of close-joined links with those complicated forms of animal life which are provided with special mechanisms for the most trifling of their wants.

"The dormant capabilities of this organless being are indirectly and interestingly shown by the shells, which, in allied forms, are built up by the agency of similar homogeneous living matter, and which are in many cases 'structures of extraordinary complexity and most singular beauty.' Professor Huxley in his lectures most justly says:

"'That this particle of jelly is capable of combining physical forces in such a manner as to give rise to those exquisite and almost mathematically arranged structures—being itself structureless and without permanent distinction or separation of parts—is, to my mind, a fact of tne profoundest significance.'"

Arctic and Antarctic Oceans.

Among the navigators and scientific men of former times it was disputed whether salt water was capable of being frozen. Experience—in many cases a stern teacher—has set that question at rest, proving that within the polar circles the sea is, for hundreds of miles, covered with masses of ice, which form a sullen, unyielding barrier to the poles. Maury describes the agencies at work in these terrible solitudes in a famous passage: "There icebergs are framed and glaciers launched; there the tides have their cradle, the whales their nursery; the winds complete their circuits, and the currents of the sea their round in the wonderful system of oceanic circulation; there the aurora is lighted up, and the trembling needle brought to rest; and there too, in the mazes of that mystic circle, terrestrial forces of occult power and of vast influence upon the well-being of man are continually at play. Within the arctic circle are the pole of the winds and the poles of the cold; the pole of the earth and of the magnet. It is a circle of mysteries; and the desire to enter it—to explore its untrodden wastes and secret chambers, and to study its physical aspects—has grown into a longing."

Marine ice is whittish, opaque, and rough on the surface, and consists of thin flakes of a porous spongy texture. From the quantity of strong brine enclosed in its substance, it is very heavy and dense, and projects only one-fifth above water. When sea-water begins to freeze, it partially deposits its salt, which, thus set free, retards the process of congelation below. Old floes are almost fresh, but a thaw renders them brackish. The polar seas do not congeal until the temperature falls to 28½ degrees of Fahrenheit, which takes place in September in the north, and March in the south; though even in summer, a slight increase of cold is sufficient to form young ice several inches thick. The sun sets early in November, and the severity of the arctic winter begins in December, continuing to the end of January, during which time the thermometer ranges to about 40 degrees below zero. A week or two of milder weather comes on; but the middle of February brings with it the sun, immediately followed by the most intense cold of the whole winter. After that, the sun's influence begins to be felt, and in July the ice breaks up. During the three summer months, the sun never sets, but noon and midnight are equally illumed by brilliant sunshine. A few stars appear in September. The darkest part of the winter is from the middle of December to the middle of January, when the aurora transforms the sky into a vault of fire, and paraselenæ appear, surrounding the moon with blazing crosses, circles, and mock-moons, scarcely surpassed by the wonderful deceptions of the solar rays. The intense cold of February is accompanied by considerable twilight; and in the latitude of Banks' Land, there is even at the end of January tolerable light from 9:30 a. m. to 2:30 p. m., so much so, that at noon Arcturus is the sole star unquenched by the increasingdaylight. The only navigable time is from July to September within the northern, and January, February, and part of March within the southern circle. During the rest of the year, the arctic regions are impenetrably sealed by vast fields of ice, both "floe" and "pack," covering every foot of water, from the shallowest inlet to the wide expanse of Baffin's Bay or Melville Sound.

The interior of Greenland is occupied by vast glaciers which encroach on the coast, filling the deep dark fiords with frozen snow. As summer advances, those portions of the glacier that project into the sea are undermined by the waves, and fall with tremendous noise, rocking in the foaming water till they gain equilibrium, when, perfect icebergs, they float here and there, impelled by winds and currents. Many are borne by the polar current southward. They meet the warm waters of the Gulf-stream in latitude 50 degrees, where they melt, and deposit the loads of earth and stones borrowed from the Greenland soil. According to Maury, this has probably, in course of time, formed the Grand Bank of Newfoundland. They are in incredible numbers. As many as five hundred have been counted in sight together, ranging from fifty to three hundred feet in hight, and of all sizes up to a mile in extent. Their appearance is very beautiful and no less extraordinary. Gothic churches, Egyptian temples, aerial palaces with pillars and arched windows festooned with crystal draperies, are only some of the inconceivable varieties of form displayed, while

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they gleam under the summer sun like mountains of burnished silver, with pinnacles and cliffs of clear sapphire or the palest green, from which rush cataracts of limpid water mingled with fragments of ice. These various hues arise from several causes. Bergs are originally composed of fresh water ice of different ages, but that formed from salt water frequently overlays it in parts. A great deal of snow lies on their summits, and forms large ponds of fresh water, when dissolved by the heat of the sun. Finally, the solar rays touch the bergs with colors, changing with the position of the spectator. Only one-eighth of their total thickness is seen above water. Frequently bergs capsize in consequence of the sea undermining their base. An ominous rolling motion gives notice of this event; it continues for some time, and at last the berg heels over and disappears with a terrific plunge, sending up columns of spray. It reappears bottom upwards, balances itself, and floats quietly on with a changed face.

All the antartic land yet discovered consists of gigantic cliff without a single opening, three thousand feet high in some places, descending in others to one hundred feet. The whole is faced with ice of enormous thickness, and covered with snow, so that at a glance the eye can scarcely imagine it to be land at all, but for spots showing the dark stones where the cliff is too perpendicular to admit of even ice maintaining its hold. Nothing is so tenacious as the cold of the antartic regions. In February the warmest summer month of 1841, the thermometer never rose above 14 degrees at noon near the continent. It is rarely above 30 degrees in the sun at mid-day during summer, and falls in winter more than 50 degrees below zero. The sun stays a week longer north of the equator than it does south, making the winter and night of the antarctic regions longer. South Georgia, in a latitude corresponding with that of Yorkshire in the northern hemisphere, is always covered with frozen snow, and produces scarcely anything but mosses and lichens. The immense preponderance of water south of latitude 30 degrees, allows the fierce westerly winds to blow round and round the world, a perpetual cyclone, keeping the sea in constant agitation.

The two polar circles differ greatly in physical conditions. The antarctic has a marine climate, that is to say, it is equable. Though wet and stormy, it is not subject to extremes of temperature, and it is believed that the south pole must be warmer than the north in winter. Arctic sunshine raises the thermometer to 66 degrees or 70 degrees, and hung in the shade immediately after, the mercury falls to the freezing point. The arctic climate is continental—dry, calm, and variable. The thermometer has a range of about 120 degrees; and while the round of the seasons brings but little change in the frightful antarctic wastes, nothing can surpass the beauty of the arctic summer—"an endless blaze of light, the air and sea and earth teaming with life," plains glowing with richly tinted flowers, and strange, glittering forms sailing past "in stately and solemn procession." Its currents are strong, and bear large numbers of bergs to meet the warm Gulf-water, and, as it is natural to suppose, bergs are found to be most numerous where the drift is strongest. The antarctic seas are in direct opposition to this. Not only are its currents sluggish and feeble, but the most powerful of them, Humboldt's Current, carries few bergs along the Chilian coast, while the main ice-drift is towards the Falklands on one side, and the Cape of Good Hope on the other, where there is scarcely any motion of the water. This is a fact which no navigators are able to explain, except perhaps on the supposition that there may be strong submarine currents at a great depth below the surface. Bergs have been observed in Baffin's Bay drifting rapidly to the north, where there was a powerful surface-current running against them, showing that in consequence of their weight and immense draft of water (in some instances more than a thousand feet), they must be influenced by some "resistless undertow" yet stronger. —*From Chamber's Journal.*

Nest-Building Fishes.

The *Anabatidæ* form one of the most remarkable of all species of fishes, owing to their capability of living for a long time out of water, a power which has formed in them some curious habits. The *Anabas scandens*, or climbing perch, of India, has been known to live for six days out of its appropriate element; and some will sometimes quit the water and wander over the land, so far from any stream or pond that they were formerly supposed to have dropped from the clouds. The German naturalist Daldorff states that he once saw one of this species which had climbed a tree to a height of five feet but this is stated by other observers to be an impossibility. This power is due to the peculiar structure of the pharyngeal bones, which, in a cavity in the base of the skull, are dilated into voluminous *laminæ*, forming cells in which a supply of water may be carried for the purpose of keeping the gills moist.

But the gourami's instinct is more peculiar than that of any other member of the tribe. By their united labors, the male and female construct a well built nest, in which the ova are deposited, and which protects the young fry from the thousand enemies by whom infantile fish are pursued and tormented.

The body of the gourami is of a brownish color, varied with some golden tints on its sides; the belly is of a silvery brown. The conformation of the fish is high from its belly to back, and the body is narrow; the head is short, the mouth small and protractile. The scales are large and round. The fish is properly herbivorous, but will eat insects and earth worms; and it is so voracious that, says M. Dabry de Thiersant, the creoles of the Mauritius call it the hog of the river.

The gourami, like most other *anabatidæ*, is found throughout the East Indies, and is a valuable food fish of delicious flavor, resembling that of the European carp.

Many attempts have been made by the French to acclimatize it on this continent, especially in Cayenne; but little success has been met with. In Algiers, other attempts have been made, and greater encouragement followed. At the Cape of Good Hope and in Australia, the experiments were entirely successful.—*Scientific American.*

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Deadwood, S. D

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Send 15c stamps and you will receive my new **Normal Catalogue** of all European-palæarctic bird eggs, in over 600 numbers, with prices and number of sets for each species. Send $5 bill by registered letter and you will receive, by return steamer, a fine collection of **European Birds Eggs,** including *Falco tinnunculus*, etc., etc.

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NATURAL SCIENCE NEWS

VOL. II. No. 5. ALBION, N. Y., FEBRUARY 29, 1896. Whole No. 57.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 35 words. Notices over 35 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

All **copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.**

TO EXCHANGE.- I have Vol. I NATURAL SCIENCE NEWS, 20 numbers of the L. A. W. Bulletin, five *Museums*, five *Oregon Naturalists* and some back numbers of the Oologist to exchange for bird and mammal skins, etc. S. P. HARWOOD, 59 W. Mt. Royal Ave., Baltimore, Md.

CLIMBERS.—The "Ow," season is at hand and you want a good pair of climbers that will not break. The "All Steel Climber" will fill the above requirements. Price with straps $1.50; without, 80 cents. Address R. C. ALEXANDER, Plymouth, Mich.

WANTED.—A tame Grey Squirrel that can be handled, will give in exchange an Imported Red Squirrel, or pay cash. R. D. WAINWRIGHT, Eltingville, S. I., N. Y.

A FINE Walnut Cabinet, 20 drawers for coins, &c. Will exchange for sets of 1st class eggs and climbers. R. D. WAINWRIGHT, Eltingville, S. I., N. Y.

BEAUTIFUL LIMESTONE.—Filled with crystalline points, any price over 1c. Guarantee at least twice as large as dealers ordinarily send! Plain limestone, clayey shale, any price. Showy mica schist 3c to 10c. Data with all. OTTO GRADY, Lullow, Ky.

DAVIE'S "KEY," $1; McIlwraith's "Birds of Ontario," $1.75 (new); 75c egg drill, 40c, one years subscription to the *Museum*, 30c, the OOLOGIST, 40c, NATURAL SCIENCE NEWS, 50c; $5 worth choice sets $1.50; "Dora Thorne," "East Lynne," "Tour of the World in 80 Days," "Don Quoxite," "Ivan the Serf," "Emerson's Essays," "Sam Jones Anecdotes," "Pilgrim's Progress," and "Maid of Orleans" (complete NEW, cloth bound) 15c each; $6 worth choice U. S. and foreign stamps for $2; first quarter '95 *Forum* magazine (new), 4 copies, cost $1, for 40c; new coin and stamp catalogue, egg tools, stamps, and books too numerous to mention at less than half price. Everybody cheerfully answered. EMMET O. AUSTIN, Randolph, O.

NAIL THIS.—To everyone sending 10c within 20 days I will mail the latest novelty out (regular price 25c). "The Japanese Fun giver." Gives more pleasure than a $20.00 cabinet of curios. Address BOX 20, Ivarea, Pa.

RARE COINS: Will exchange a collection of rare old Canadian tokens, hard time's tokens (U. S.), etc., for good double gun or good camera with outfit. C. W. WEST, 520 North Academy St., Galesburg, Ill. 56-2t, O.

FOR SALE or EXCHANGE.—Collecting gun, camera, typewriter, stamp album and stamps, three volumes of People's Cyclopedia (cost $20) U. S. sabre used in Revolutionary, minerals, mounted birds, deer heads, fox skin mat, sets and skins for best offer in sets, skins, books on Ornithology and Natural History specimens. Will sell cheap for cash. GILMAN T. BROWN, Taxidermist, North Turner, Maine. O

WANTED:—Miners in the West to send me mineral specimen samples. If satisfactory will pay cash or eastern minerals cut or rough gems, shells, coral, etc. Correspondence with collectors and mining men solicited. ROBERT BURNHAM, 15 Chestnut St., Providence, R. I. 56-2t

DEAR SIR:—I am anxious to have you see a collection of the Famous Herkimer County Crystals, hence I make you this offer: If you are a subscriber to this paper, let me send you by return mail, post-paid, 36 of these Brilliant Gems; if they please you send me 72 cents, if not satisfactory return the collection and it will be O. K. Yours respectfully, A. B. CRIM, Middleville Herkimer Co., N. Y.

CASTS OF LARGE & RARE BIRDS EGGS: I will sell fine casts of the following eggs at these very low rates: Great Auk, 60 cts.; Rhea, 45 cts.; Emu, 45 cts.; Ostrich, 45 cts.; Golden Eagle, 50 cts.; Bald Eagle, 45 cts. Any of the above sent post paid upon receipt of price. Apyornis, $2.50; Moa, $1.75; by express at purchaser's expense. All of these casts are perfect imitations and no collection should be without them. N. P. BRADT, Hinds'burgh, Orleans Co., N. Y. 56-2t, O

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WANTED.—Meteorites. New and undescribed ones especially desired. Good prices paid for complete "falls" or "finds." EDWIN E. HOWELL, 612, 17th St. N.W., Washington, D C

EGG COLLECTORS.—Attention! I have a large lot of first class sets for sale at ½ rates, such as 54, 108, 127, 128, 177, 151, 325 324, 331, 333 337, 373, 384, 503, 430 131, 133, 434 539 and a great many others. Also fossils, minerals, Indian relics and mounted birds at same rates. Send stamp for whichever lists you want. GEO. W. DIXON, Watertown, So. Dak.

EXCHANGE. Two coins one Bavaria 1774, five, one of Spain 1787; also five 3c Columbians. Want glass eyes, Indian relics shells, etc. H. DAVIS ACKERLY, Northport, N. Y.

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R-I-P-A-N-S

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Stations.	A.M.	A.M.	A.M.	A.M.	P.M.	P.M.	P.M
Rochester.....			8:00	10:30	2:20	5:35	10:00
Albion.....		7:00	9:10	11:35	3:25	6:50	11:06
Lockport.....		8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge..		8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.		9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....		8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....		6:25		11:00	1:30	5:00	5:5(
Niagara Falls.		6:35	8:05	11:18	1:40		6:00
Susp. Bridge.		6:45	8:10	11:25	1:48		6:05
Lockport.....	6:00	7:25	8:50	12:00	2:25	5:55	6:45
Albion.....	6:50	8:15		1:00	3:25	6:45	7:50
Rochester.....	8:00	9:20		2:05	4:35		9:00

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1.	Strombus alatus, 2 to 3½ inches	4c
2.	Fulgur perversus, 3 to 8 inch	6
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4.	" distans, 1 to 3 inches	4
5.	" filamentosa, 1 to 3 inch	2
6.	Cardium magnum, 3½ to 4 inches	6
7.	" muricatum, 1½ inch single valves	1
8.	" serratium, 1 to 2½ inch	3
9.	Arca ponderosa, 2 to 3 inch	3
10.	" noæ 1 to 4 inch	3
11.	" floridanum, 2 to 2½ inch	3
12.	Cytherea (callista) gigantea, 3 to 5 inch	10
13.	" " maculata, 1 to 2½ inch	6
14	Natica duplicata, 1 to 3 inch	2
15	Chama Arcinella, 1 to 2 inch	5
16	Dosinia discus, ¾ to 4 inch	5
17	Pholas costatus, 3 to 6 inch, double valve	15
18	Murex pomum, 1 to 3 inch	3
19	" salleanus, 1 to 3 inch	5
20	Pyrula papyratia, 3 to 5 inch	8
21	Pecten exasperatus, ½ to 3 inch, single	1
22	Conus Floridanus, ¾ to 1 inch	2
23	" proteus, 1 to 3 inch	10
24	Pinna muricata, 4 to 10 inch	8
25	Lucina edentula, 1½ to 3 inch, single	2
26	Cancellaria carolinensis, 1 to 1½ inch	3
27	Oliva litterata, 1 to 2½	4
28	Anomia ephippium, 1 to 2½ inch	1
29	Melongena subcoronata, 2 to 6 inch	8
30	Cerithium eburnum, 1 to 1½ inch	3
31	Turritella, 1 to 1½ inch	2
32	Tellina, ½ inch	1
33	Marginella, ¼ inch	2
34	Large liver sea bean, 3c; black banded sea bean, 2c; grey sea beans	1
35	Sea beaver	15
36	Conch spawn ribbon 18 inch to 2 feet	20
37	Skate eggs	5
38	Rose coral, shaped like a rose	10
39	Florida air plants	10
40	Tarpon scales	2
		$2 15

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50	var. U. S.	$ 50
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100	" " Mexico	10
25	" unused	20
8	" Columbians	20
12	" Cuba, unused	20
7	" Ecuador, unused	10
6	" Costa Rica, unused	15

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Annual Reports of U. S. Geological Survey.

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Smithsonian Contributions to Knowledge.

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I also desire second-hand copies of any standard book, reports or publication devoted to Ornithology, Oology, Geology, Mineralogy, Palæontology, Zoology, Conchology, Botany, Microscopy, etc., etc.

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Hervey's "Sea Mosses."

Sargent's "Silva of N. A."

Hough's "Am. Woods."

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Any of Dana's, Winchell's, Miller's and Geikie's Works.

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Any of Tryon's, Sowerby's, Gill's or Woodward's Works.

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Any of Packard's or Comstock's Books.

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I can offer in exchange for any of the above, either in large or small lots, collections scientific for teaching, study or museum purposes, or showy for decorative or ornamental purposes, in any of the following departments: Bird skins, bird eggs minerals, fossils, shells, corals, Echinoderms, Indian relics, (modern or stone age,) etc., etc.

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I also offer about 100 cloth bound books on miscellaneous popular subjects,

About 200 paper cover novels and pamphlets.

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Rowell's '95 Newspaper Directory.

Coues' "Key to N. A. Birds," Ed., 1872.

Maynard's "Birds of Eastern North America," (lacks 16 pages.)

"Institutiones rei Herbariæ," 3 Vo 9.

8 old books valued at $3, $5 and $25 resp. and dated 1747, 1665 and 1580.

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I also have a $25 Materia Medica collection, for students in Pharmacy and Medicine.

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Natural Science News.

VOL. II. No. 5. ALBION, N. Y., FEBRUARY 29, 1896. Weekly, $1.00 a Year

Natural Science News.

A Weekly Journal Devoted to Natural History.

FRANK H. LATTIN, Editor and Publisher, ALBION, N. Y.

Correspondence and items of interest to the student of any of the various branches of the Natural Sciences solicited from all.

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Objects of Interest on a Guano Island.

A recent writer from Baker's Island, in the South Pacific, off the coast of Peru, about 2,500 miles, gives an interesting account of life on that little patch of *terra firma*, which carries upon its bosom nearly a million tuns of guano.

He mentions that fish of remarkable beauty, weighing from fifty to sixty pounds, are abundant, and are easily taken with a hook. Sharks abound also—murderous sharks who swarm about the ship with greedy and persistent devotion. These sharks are, by hereditary proclivity, man-eaters; and the white man who comes within their reach is snapped at in an instant by a score of ravenous mouths. But, strange to say, a dark-skinned Polynesiam will swim about their midst and rarely be molested. I have seen a native of the Hawaiian Island heartlessly jump from the bow of a ship into the midst of a "school" of these fellows, swim, with the end of a line in his mouth, to one of the buoys, and return to the vessel uninjured.

Whether there is a sort of free-masonry between the sharks and the Kanakas, or whether the tastes of the shark are too fastidious, and not sufficiently cannibal to relish cannibal flesh, has not been satisfactorily explained. But the shark and the Kanaka are on the friendliest terms imaginable.

The flying fish abounds in these waters. When pursued by the dolphin, their foe, whole schools of them may frequently be seen to leap out of the water and fly for several hundred yards, skimming along quite near the surface and now and then gaining new velocity by striking the crest of a wave with their long, ray-like, pectoral fins. But this beautiful fish has enemies in the air as well as in the sea, and frequently its aerial flight is cut short by some fleet sea bird that is ever on the alert to seize its prey.

THE FEATHERED INHABITANTS.

Among the chief objects of interest on the Island to a visitor are the birds; and they are well worthy of study. The sea-fowl are at all times a noisy set, but at night, while the older ones are engaged in the quarrels of love-making, and the young are complaining over their scanty rations, the Babel of their chattering is destructive to the sleep of one unused to such disturbances.

During the first night of my stay on this forlorn spot, it seemed at times as if the house were beseiged by innumerable tom-cats; then the tumult resembled the suppressed bleating of goats, and I heard noises as of bats grinding their teeth in rage; again it was the querulous cooing of doves, and soon the chorus was strengthened by unearthly screams, as of ghouls and demons in mortal agony. But on going forth into the darkness to learn the cause of this infernal serenade, all was apparently calm and serene, and the radiant constellation of the Southern Cross, with the neighboring clouds of Magellan, looked me peacefully in the face, while, from another quarter of the heavens, the Pleiads shed their "sweet influences" over the scene.

The most quiet time of night with the birds is about day-break, when they seem to subside into "cat-naps," preparatory to the labors of the day.

By day many of the birds range on tireless wing, over leagues of ocean, in quest of fish. But still the number of them that remain about the island is so great as to defy computation, and as you pass through their haunts, in some places they rise in such clouds actually to darken the air above you.

The eggs of some of the birds are of fine quality, and are much esteemed by the Americans as well as the Hawaiians on the island. Those of a bird called the *nu-e-ko* are most valued. This name is an imitative word, derived from the cry of this restless creature, and is applied to it by the Hawaiians, who have qnick intuitions in onomatopoetic matters.

The *nu-e-ko* is a bird of moderate size bearing a striking resemblance to the piping plover, It is less phlegmatic and stupid than most of the other birds, and does not waste so much of its time in droning and crooning and love-making.

Yet it is not undomestic in its habits. While the father is engaged in the business of the island, providing for the wants of the family by fishing, the mother is ever hovering near her half-fledged young, now inviting them to try their wings in flight, and now hustling them out of sight under some clump of brown grass, and teaching them to lie close in order to escape observation.

The *nu-e-ko* does not make its home on the guano fields, but prefers the sandy shingle nearer to the ocean. The plumage of its back is brown, spotted with gray, a color, so nearly resembling that of the sand upon which it makes its nest, that it might almost escape detection. But, when danger approaches it rises on the wing, uttering its shrill, peculiar cry of "*nu-e-ko! nu-e-ko!*" and leaves its egg or its young to the tender mercy of the intruder. As it spurns the ground it shows its throat, breast and wings, lined with showy feathers, that glint in the sun like flakes of silver, while it whirls and curvets in the air. This bird is plain in its tastes, and for a nest is content with a simple hollow, scooped out of the sand, the warmth of which assists in the incubation of its speckled eggs.

The Gannet (*Sula bassana*) is a blrd of great power and beauty. The color of the grown bird is white with wings that are tipped with black It has a long sharp beak which is serrated and slightly curved at the end, a formidable weapon of attack as of defense. Its wings are of immense strength, and when fully spread, they span about seven feet from tip to tip. In their fishing expeditions they range for hundreds of miles from their nesting places, and late in the day ships in mid-ocean often see

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long files of them returning home like heavy laden treasure vessels speeding to port. This sight is regarded by seamen as a sure indication that land lies in the direction of their flight, though it may be scores of leagues away.

In regard to moral character, the birds may be divided into two classes—those which make an honest living and those which are robbers. The Gannet stands at the head of the respectable birds, and is a thrifty and honest citizen of the air.

The representative of the thievish class is the frigate-pelican or Man-of-war Hawk(*Tachypetes aquilus*). This bird has a dense plumage of gloomy black, a light wiry body, that seems made for fleetness, and wings of even greater spread than the Gannet's. Its tail is deeply forked, its bill is long, sharp, and viciously hooked. Audubon records the frigate-bird as superior perhaps, in power of flight, to any other. It never dives into the ocean after fish, but will sometimes catch them while they are leaping out of the water to escape pursuit. It is often content to glut itself on the dead fish that float on the water, but it depends mostly, for a subsistence upon robbing other birds. It is interesting to watch them thus occupied.

As evening comes on these pirates may be seen lying in wait about the island, for the return of the heavily laden fishing-birds. The smaller ones they easily overtake and compel them to disgorge their spoils; but to waylay and levy blackmail upon those powerful galleons, the Gannets, is an achievement requiring strategy and address. As the richly laden Gannet approaches the coast of his island home, he lifts himself to a great height, and steadily oars himself along with his mighty pinions, until he sees his native sands extending in dazzling whiteness below. Now sloping downward in his flight, he descends with incredible velocity. In a moment he will be with his affectionate mate who is awaiting his return to the nest.

But all this time he is watched by the keen eye of the Man-of-war Hawk, who has stationed himself so as to intercept the Gannet in his swift course.

With the quickness of thought the Hawk darts upon him, and, not daring to attack boldly in front he plucks him by the tail, and threatens to upset him, or he seizes him at the back of his neck and lashes him with his long wings. When the poor Gannet, who cannot manœuvre so quickly as his opponent, finds himself pursued, he tries to buy his ransom by surrendering a portion of his fish cargo, which the Hawk, swooping down, catches, before it has had time to reach the earth. If there is but one Hawk this may be a sufficient toll, but if the unweildy Gannet is set upon by a number of these pirates, he utters a cry of real terror and woe, and, rushing through the air with a sound like a rocket in his rapid descent, he seeks to alight on the nearest point of land, well knowing that when once he has a footing on *terra firma* not even the Man-of-war Hawk dare come near him.

The Man-of-war Hawk is provided about its neck and chest with a dilatable sack, of a blood-red color, which it seems to be able to inflate at pleasure. On calm days, about noon, when the trade-wind lulls, giving place to a sea-breeze that gently fans the torrid island, these light, feathery birds may sometimes be seen at an immense height balancing themselves for whole hours without apparent motion on their out-stretched vans.

Whether they are able to increase their specific levity by inflating their pouches with a gas lighter than the atmosphere, or whether they are sustained by the uprising column of heated air that comes in on all sides from the ocean, is a question I am unable to answer. While floating thus, this bird has its pouch puffed out about its neck, giving it the appearance as though it had its throat muffled in red flannel.

The most unique and novel bird on the island is the Tropic-bird or marine-spike (*Phæthon phœnicurus*).

Its wings are long and its flight very rapid. It is distinguished by two slender, tapering feathers, of rare beauty, which project like a long steering oar from its wedge-shaped tail.

I cannot resist the temptation of alluding to one other bird that abounds here. It is the Mother Carey's chicken (*Thalassidroma Wilsonii*)—an ocean butterfly—the pet and favorite of every true sailor. This bird is about the size of a chimney swallow. Its pretty ways and seemingly innocent affections, are enough to win the heart of almost anyone. The society and study of these birds are not without an inspiration.—*From an old Scientific American.*

Age of Trees and Size of Timber.

W. W. Spicer contributes in an old issue of *Hardwicke's Scienc Gossip* an interesting article on the above subject. He says:

"The life of a plant is determined by its inner structure, by the laws of its growth, by its power of resisting external injuries, and by other circumstances, many of which are a mystery, and no doubt will remain so. But, bounded though it is within limits as narrow and those which hedge round the life of man or the lower animals, there are cases on record of certain members of the vegetable kingdom whose existence has been prolonged for very extraordinary periods.

"The most celebrated of all old trees (and perhaps the most curious which does not generally boast of long-lived members) is the Great Dragon tree, of Orotova, in Teneriffe. This monstrous specimen, which came to an untimely end in a hurricane a few months ago, was well known and carefully looked after at the conquest of the island by De Bethencourt in the year 1402. It appears to have been of the same size and appearance then as now—namely, from 70 to 80 feet, with a hollow trunk of about 20 feet in diameter—whence, judging from the slowness of growth in this family of plants, and the little change that has taken place in four centuries and a half, it is inferred that the tree could not have been less than 5,000 years old at the time of its death. Another giant among the pigmies of modern days is the Bao bab (Adansonia), an African tree, specimens of which, growing on the banks of the Senegal river, 60 to 80 feet high in diameter, were estimated by Adanson to be over 5,000 years old. The Portuguese, on their voyages of discovery, were in the habit of carving their names, etc., on conspicuous trees, as a memorial of their having been the first to visit the spot. Adanson arrived at the age of the trees by comparing the depth of the indentations with the number of 'rings' in the portion of wood overgrowing them. The names themselves bore a date which showed them to have been cut three centuries prior to his visit. It has been suggested that possibly in a tropical climate these rings may not be so good a test of age as in our more temperate clime, where they are really

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annual. Nevertheless allowing that the Baobab forms two rings in each year, in lieu of one, it is still deserving of 'honorable mention.' Yews have a great reputation as long-livers. The care usually taken of them in church-yards and similar places, no doubt tends greatly to their preservation. Thus a yew in the church-yard of Brabourne, in Kent, has, it is believed, reached the enormous age of 3,000 years; another at Fortingal, in Scotland, is quoted at 2,600 years, and others at Crowhurst, in Surrey and at fountains Abbey, are put down at 1,400 years. The yew has some near relatives in the cypress, the Taxodium, and the Wellingtonia. Of the first there is a specimen at Grenda, which was a celebrated tree before the Moors were expelled from Spain by Ferdinand and Isabella, toward the end of the fifteenth century. A *Taxodium distichum* at Oaxaca, in Mexico, which in 1829 measured 120 feet in height by 117 in circumference, is supposed to number forty centuries. It sheltered Hernan Cortez and his little band of adventures under its wide-spreading boughs about the year 1520. Among the gigantic Wellingtonias (orWashingtonias, as our thin-skinned cousins across the Atlantic will persist in calling them in spite of priority of title)—among these mammoth trees of California, which reach a height of 300 or 400 feet, individuals have been observed which must have witnessed 3,000 summers.

"Two other American trees, both Brazilian, have been noticed for their size and probably long lease of life. The first is the Bertholetia, which supplies the 'Brazil nut' of commerce, specimens of which, growing on the banks of the Amazon, have been noticed with more than 1,000 distinct rings. The other is the Hymenæa, in connection with which I transcribe the following passage from 'Lindley's Vegetable Kingdom.' The size of the timber is sometimes prodigious. The locust trees of the west have long been celebrated for their gigantic stature, and other species are the colossi of South American forest. Martius represents a scene in Brazil, where some trees of this kind occured of such enormous dimensions that fifteen Indians with outstretched arms could only just embrace one of them. At the bottom they were 84 feet in circumference, and 50 feet where the holes became cylindrical. By counting the concentric rings of such parts as were accessible, he arrived at the conclusion that they were of the age of Homer, and 332 years old in the days Pythagoras; one estimate indeed reduced their antiquity to 2,052 years while another carried it up to 4,104; from which he argues that the trees cannot but date far beyond the time of our Saviour.

"My remaining examples are European. Among them is a chestnut tree growing on Mount Etna, and generally known as *Castagna di cento cavalli*, on account of the immense space which it overshadows. It is 180 feet in circumference, and cannot be less than one thousand old. A scarcely less celebrated tree is growing at Tortworth, in Gloucestershire. It was a tree 'of mark' in the days of King John. The great lime tree of Neustadt on the Kocher, in Wurtemburg, which as early as 1220 caused the town to be known as *Neustadt ander grossen Linde*, is believed to be not less than 800 years old. Its stem is 38 feet in circumference. At Worms, where there has been lately such a gathering of crowned and ducal heads to do honor to the memory of the geat Reformer Luther, is an elm well known in Germany as the Lutherbaum, which measures 116 feet in height, with a stem 35 feet in circumference, and has attained an age of not less than 700 years.

"A less venerable member of the vegetable kingdom, though still one that can look back through a tolerable vista of years, is a Judas tree (*Cercis siliquastrum*), in the Botanic Garden at Montpelier; it was planted in 1598, and consequently numbers 260 years. Its trunk a short time ago measured 12 feet around In 'Science Gossip' of last year, p. 163, was given a short account of a rose, which covers one end of the principal church at Hildesheim, in Hanover. This remarkable climber was well known as 'a monument of the past' as early as 1054. Tradition assigns its origin to the year 814, under Louis the Pious,son and successor of Charlemagne.

"Another tree with a legendary history is a 'Gospel Oak' in my own neighborhood in Hampshire, standing in Avington Park. If we are to believe the stories told of it, and common there in every one's mouth, this 'old, old tree' was spared, at the earnest intercession of certain monk residing at Winchester, solely on account of its great age, when a brother of William the Conqueor leveled the surrounding forest of Hampage, about A. D. 1076. For some sixteen centuries, therefore, it has defied the storms of winter; but the latter have conquered at last. Ten years ago the old veteran made a final struggle to show some signs of life; and now it stands a hollow trunk, with two or three bare and withered arms, and only prevented from falling by a stout band of iron, with which it is encircled. A mere infant by the side of the Avington tree is the Great Oak of Pleischwitz, near Breslau, whose age is reckoned by Goppert at 700 years. It was blown down in 1857; its fall being due to a hollow within its huge stem, which could accommodate with ease twenty-five or thirty persons standing upright.

"Dr. A. B. Reichenbach, in his "Vollstandige Naturgeschichte," says: 'We know of lime in Lithuania with 815 annual rings, and a circumference of 82 feet; of oaks in the Polish forest in which one can count 710 perfect rings, and whose stems measured 49 feet round. There are elms whose age is known to be above 350 years, ivy 440, maples 516, larch 570, oranges 640, planes 720, cedars 800, walnut 900, limes 1,000, pines 1,200, oaks 1,400, olives 2,000.' From these numerous examples of extreme old age one may almost conclude that (provided the seed from which they spring be sound, the soil and climate favorable, and the means of nourishment abundant) the existence of many plants may be extended to an indefinite period, should they be fortunate enough to escape accidents from without."

Leeches.

This animal has had a reputation from the earliest periods of medical science. Even from the time of Homer, the appelation of leech was given to the practitioners of the art of surgery, and in many of the languages of German derivation the word signifying a physician is identical with that given to the leech. From an old English exchange we gather the following facts relative to the life and habits of this species of aquatic worm, which is indeed among the lowest classes of the animal chain of being:

"There are about thirteen or fourteen species of the leech, some of which are found in most parts of the world; but the medicinal species is best known, and abounds

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in various parts of the world—as America, Russia, Hungary, Spain, Portugal, in the marshy plains of Egypt, and in various parts of Asia. It belong to the class *œnnelides*, or ringed worms, its body being composed of a series of rings, or circular muscles, by the successive contraction of which it moves along either in the water or upon the surface of leaves, reeds, or other solid bodies. The tail extremity is in the form of a cup or sucker, by which it adheres firmly to flat substances, on the same principle as a boy's leather sucker adheres to and lifts up a stone. The mouth is also in the form of a sucker, and is, moreover, furnished with three cartillaginous teeth, placed so as to form with each other a triangle. When examined and felt with the point of a finger, they seem soft and blunt; but the animal, when about to pierce the skin, seems to have the power of erecting them into firm, sharp-edged lancets, which saw through the integuments in a single instant, and almost without inflicting any pain. Having made the puncture, the blood is extracted by a process of suction, and is passed through the œophagus into the stomach, or rather stomachs, of the animal, which consist of a series of communicating cells, that occupy the greater part of the interior of its body. The leech having thus gorged itself to the utmost, if undisturbed, remains in a half-torpid condition till it has digested its gory meal, and not unfrequently dies of the surfeit. If it survives it will be greatly increased in size. They can live for months and years on what appears to be pure water alone. This forms the singular circumstance in the diet of these animals. They delight to gorge themselves with a full meal of blood, even to surfeit; and yet with plain water they live, grow, and seem to have the greatest enjoyment of existence. It would appear as if their three lance-formed teeth, and their carniverous appetites, were bestowed more for the benefit of man than for themselves, and that, in their system of dietetics water is the rule and blood the exception.

The medicinal leech is a native of many parts of Britain, but is now becoming very rare. France is supplied chiefly from Strasburg, whence they are imported from Hungary, Turkey, Wallachia and Russia, and kept in ponds. They are carried into France on spring wagons, and are contained in moistened bags, each bag containing 120 leeches. Previous to 1834 upwards of 46,000,000 of leeches were imported into France annually. At present the numbers have decreased to 17,000,000. They are imported into London and Leith by sea, packed in little bags, which are occasionally moistened with water during the short voyage. In general they arrive fresh and healthy; but they are not unfrequently liable to disease, which destroys great numbers. There are three sorts, or sizes, the largest and middle sorts being reckoned the best. A large leech is calculated to abstract half an ounce of blood, besides the quantity which flows from the wound afterward. The smaller sizes are comparatively inefficacious.

A common animal in the pools of this country is the horse leech. It nearly resembles the other, but is of a more uniform color, and not so decidedly marked with greenish streaks on the backs as the medicinal species. The horse leech has no great inclination to fasten on the human skin, but when it does so it takes its fill, just like the other, and no more, There is a popular but unfounded belief that if a leech of this description do fasten on the skin, it will continue to suck and discharge the blood till every drop in the body is exhausted. Hence they are the dread of every school boy who happens to wade with naked legs into their dominions.

The leech, like many other animals, appears to have a very nice sensibility in regard to atmospheric changes, and especially what regards the electric modifications of the air. Before storms, or any sudden change in the atmosphere, the leech is seen in great activity, and darting up to the surface of the water in its jar. These animals, too, at certain times, are found to move out of the water, and remain for a considerable period clustered on the dry upper surface of the jar; while on other occasions they will remain for days immersed in the water near the bottom. They produce small eggs, which form into cocoons, from which in due time the living young make their appearance.

Geology and the "King Crab."

"Visitors to the Aquarium House at the Zoological Gardens have no doubt noticed the living specimens of that curious creature, the "king crab," which are now in a tank alive and well. The most curious part of their structure is the eyes; they have four, which are composed of numerous lenses, like the dragon-fly or bee, and are so arranged that they can see objects on each side of them. Besides being interesting simply as living creatures, king crabs are the nearest existing relations to the ancient form of beasts called 'trilobites.'" —*The London Field.*

The king crab is what is commonly known here as the "horse-shoe." Such creatures are taken by thousands annually on the marshy coasts of New Jersey and Long Island, and are used extensively for manuring the land. No living specimens are now found in England, but their fossils are uot uncommon. The past geologic age of Europe is similar in many of its features to the present in the New England States. Hugh Miller in his lecture on geology says: "America though emphatically the *New* World in relation to its discovery by civilized man, is at least in these regions an *old* world in relation to geological type; and it is the so-called *Old* World that is in reality the *new* one."

Professor Agassiz says:

"If we compare a list of the fossil trees and shrubs from the tertiary beds of Œningen with a catalogue of the trees and shrubs of Europe and North America it will be seen that the differences scarcely go beyond those shown by the different floras of those continents under the same latitudes. But what is quite extraordinary and unexpected is the fact that the European fossil plants of that locality more closely resemble the trees and shrubs which grow at present in the Eastern parts of North America than those of any other part of the world. The present Eastern American flora and fauna have a more ancient character than those of Europe. The plants, especially the trees and shrubs growing in our days in the United States, are as it were, old-fashioned."

On this topic Hugh Miller again says:

"Towards the close of the miocene period old Scotland exhibited features greatly resembling those presented to the Puritan fathers by the forest-covered shores of New England, little more than two centuries ago.—*Scientific American.*

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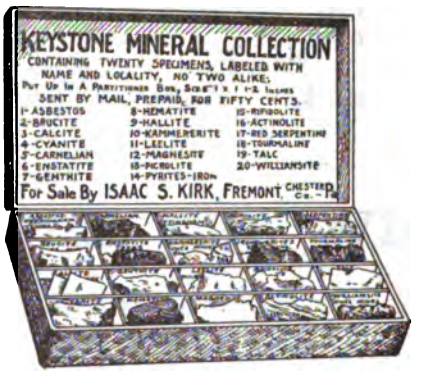

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NATURAL SCIENCE NEWS

VOL. II. No. 8 ALBION, N. Y., MARCH 21, 1896. Whole No. 60.

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Stations.	A.M.	A.M.	A.M.	A.M.	P.M.	P.M	P.M
Rochester.....			8:00	10:30	2:20	5:35	11:00
Albion		7 00	9 10	1:35	3:25	6:50	11:06
Lockport		8:05	10:05	12 22	4:20	7:40	12:06
Susp. Bridge ..		8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.		9 06	11:00	1:10	5:10	8:30	12:45
Buffalo.....		8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....		6:25		11:00	1:30	5:10	5:50
Niagara Falls.	6 35	8 05		11:19	1:40		6 04
Susp. Bridge .	6:45	8 10		11:25	1:48		6:00
Lockport.....	6:00	7:25	8:30	12:00	2:25	5:55	6:45
Albion.....	6:50	8:15		1:00	3:05	6:45	7:50
Rochester	8:00	9:30		2:05	4.35		9:00

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Natural Science News.

VOL. II. No. 8. ALBION, N. Y., MARCH 21, 1896. Weekly, $1.00 a Year

Natural Science News.

A Weekly Journal Devoted to Natural History.

FRANK H. LATTIN, Editor and Publisher, ALBION, N. Y.

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The Primeval Flora.

The above topic formed the subject of a very interesting lecture by President Dawson, of McGill College, Montreal, at Steinway Hall, New York, on the evening of the 23d December, 1868. Notwithstanding the lecture embraced altogether too wide a field for anything like thorough treatment, the happy stlye and popular method adopted by the lecturer, made it very acceptable. After the usual introduction of the lecturer to the audience, President Dawson said: An ancient authority has defined geologists as a class of amiable and harmless enthusiasts, who are happy and grateful if you will only consent to give them an unlimited quantity of that which, to them, has, perhaps, the most value of all things, namely, past time. I confess to this definition of geologists, so far as my subject this evening is concerned, for I shall have to make a large demand upon your faith as to the extent of the past time, and shall have to ask you to give me all of it which you reasonably and conscientiously may. Geology, indeed, works strange revelations in our view of things, new and old. The primitive forests, and even the gray rocks and hills themselves are things not primitive and unchanging, not things, comparatively, of yesterday, the successions of olden forests and olden rocks that in dim and ghost-like procession recede from our view into the past of an antiquity, compared with which antiquities are things of yesterday. The murmuring pines, and hemlock, bearded with moss and in garments green, indistinct in the twilight, may stand like Druids of old with voices sad and prophetic; but they belong not to the forest primeval of the earth's younger days, though they may point backward to perished predecessors of truly old date, truly primitive and geological antiquity. It is to them that I must try to carry you back in imagination this evening to awaken those slumbering ages and make them green again in your eyes and vocal in your ears.

Transferring our thoughts to these old forests, and imagining their strange fantastic forms, and the singular creatures that lived beneath their shade, we shall find onrselves in a new world different from that which we inhabit: and differently peopled. Could we marshall in one view four or five planets, each clothed with the peculiar flora, and inhabited by the peculiar fauna of a distinct geological period, we should truly have before us so many distinct worlds with nothing to connect them with each other save only certain similarities of plan and conception. But when we view these several worlds as successive, and destined the one to prepare the way for the other. we can perceive relations of the most remarkable and unexpected character, and have presented to us a long protracted scheme of creation too vast to be contained on the surface of our planet at any one period, and representing with our present flora all the possibilities of vegetable existence, and all the uses, present and past, which plants can serve.

I have selected as the subject of this lecture one small department of the vast field of fossil plants, a department of peculiar interest as relating to the oldest known plants, and which as a special and favorite study of my own I must endeavor to make attractive to you. But I must not rest contented with this, but in justice to the subject must try also to present it in an orderly and systematic manner.

I must endeavor to give you something like a connected sketch of that primeval flora which is the subject of this lecture; and in order to do this, I must first say a few words on the relations of their primeval flora to existing plants; 2d, I shall say something of their relations to the geologic time; 3d, I shall enter upon the subject proper by describing to you some of the most remarkable plants that flourished in that primeval age; and, 4th, I shall conclude with noticing some of the uses of primeval flora to us, the practical use it serves to our present race; and I shall endeavor to give you, if possible, some idea of the light which geology gives us as to the first appearance of plants on our planet, and how far back they can be traced in geologic time.

First, then, I shall speak for the benefit of those who may not have pursued the study of botany, of the relations of existing planets, and the relation of the fossil flora to them. Taking the whole of the planets known to us, we shall find upon examination that they may be all divided into two great series; first, that series of plants in which we observe distinct flowers, and fruit containing seeds. These constitute the phenogamous plants of the botanist. Then we have a great class of plants of a lower and humbler organization, which are destitute of true flowers, and which instead of producing seeds, produce granules, performing the functions of seeds, called spores. These are the cryptogamous plants of the botanist. The whole vegetable kingdom is divided into these two great classes. Now, taking first the phenogams, we shall find three classes of them. We have first, that group of plants in which all our trees and shrubs and the greater part of our cultivated plants and weeds belong—the exogens, which have a distinct pith, and wood, and bark.

Then we have a class in which these features are more or less mixed through the entire structure, and in which there is little distinction of wood and bark, and of which the palms of the tropics and the grasses of our own latitude are examples. These are called endogens. A third class are gymnosperms, which have naked seeds, specimens of which are the well known pines and the sago of the tropics. Thus, to recapitulate, we have three groups of the phenogams, of which oak or maple, the palm, and the pine tree, are respectively representatives.

In the cryptogams we may also make a three-fold division respect-

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ively represented by the ferns and club mosses, the common mosses, and lichens, fungi and seaweeds.

Next let us see what relation these primeval flora bears to that of modern times. Two relations are possible. First, that the primeval flora may belong to a different classification altogether; and second, which is the true supposition, that the whole flora of the earth, from the earliest geologic times, comes under one classification. This shows that, from the beginning of geologic time, one plan has been followed out in the construction of the vegetable kingdom, and that the whole vegetable kingdom consists not of the plants now living on the earth, but includes all the plants that have ever lived upon it. Again, there is another possibility, that the primitive flora may include representatives of all our modern classes of plants, or only some of them. The fact is, that it includes mainly representatives of some of them, and those of a medium grade, neither the lowest nor the highest, so far as the land flora is concerned. The fossil plants are not chiefly exogens or endogens, but gymnosperms. On the other hand the acrogens, or the highest group of the cryptogamous plants in our day were then the most abundant. The primeval flora, therefore, embraced the higher cryptogams and the lower phenogams. If we had known nothing of vegetation but that manifested by the primeval flora we should not have known the possibilities of the vegetable kingdom, either in its highest ranks or its lowest ranks, but only in the middle of the scale.

Next let us glance at the relations of the primeval flora to geologic time. The oldest rocks we know, the eozoic, have afforded no plants, so far as we know, at all. The next stratum, the paleozoic, includes the oldest land plants we know. But in the mesozoic period we arrive at a different flora, and in the cainozoic, or modern period, we have two other floras. It is the paleozoic flora only of which I shall speak tonight. During the whole of the paleozoic period, the seaweeds have existed. In the earlier periods the classes of acrogens and gymnosperms far exceeded the exogens and endogens, while the reverse is the fact at the present day. The warm and moist climate of portions of the southern hemisphere at the present day, now have a flora more nearly resembling the early epochs than any other portions of the earth. The uniformity of the flora of that early period indicates a temperature nearly uniform throughout the earth. At present we have in our atmosphere but a small quantity of carbonic acid gas. If we had more it would tend to make lhe climate more uniform, by preventing the radiation of heat from the earth. The carbon locked up in our coal mines, and then existing in the atmosphere, may therefore have been at least one reason for the uniformity of climate on the earth in the paleozoic period, the flora of that day indicating a warm and moist climate.

Next, looking to the flora of the plants, we will turn to the carboniferous period, when there was a vast amount of vegetation, afterward made fossil and becoming coal. In that moist, warm, but unwholesome atmosphere, we find the sigillaria, or seal-tree, one of those most abundant in the swamps of the carbeniferous period. Here we have a large tall stalk, without branches, covered with large leaves; or perhaps divided into a few branches. We have remains showing the ribbed structure of the stalk, and the scars of the leaves. There are no trees in our latitude resembling it in structure. We know of the fruit of the sigillaria only by the abundance of a certain nut that is found around them. Trees of two and three feet in diameter were not uncommon. The root of this tree is more remarkable even than its stem, having attracted the attention of geologists before the stem, and obtained the name of stigmaria. These roots are bifurcated and spread out in a remarkably regular way, all the little rootlets spreading as regularly as leaves. These roots occur very often in the coal formation without the stems; and at first it was supposed that they were the whole of the plant. The first process in the formation of a bed of coal was usually the growth of a forest of sigillaria.

The next class are the calamites. The lecturer here related an anecdote of an unlearned individual who having been shown some specimens of ferns and calamites, the former being called filices, reported to his friends that he had seen the savant's "felicities" and "calamities." In one sense the calamites may be justly styled calamities, for they had been the subject of more dispute on the part of geologists perhaps than any other fossil plant. They seem to have grown on muddy flats along the margin of the sigillarian woods, resembling equiseta or mare's tails; and they are still preserved in coal formations in large numbers. The calamites seem to have preserved the sigillarian forests from the effects of inundation, by causing the mud to settle before the waters passed into the forests. The calamites thus contributed very much to the purity of our coal beds.

The next plant is the lepidodendron or scale-tree, of a size equal to the sigillaria, resembling our ground pines or club-mosses. This tree was more plentiful in the earlier coal formations than in later periods. Many other diagrams and petrifactions of fossil plants were here exhibited. The plants of the carboniferous period would have presented to our eyes a very monotonous appearance; for it was characteristic of the flora of that period that there was a large number of species, but few genera. There were also some plants more familiar to our eyes. The ferns are to be found in the coal beds preserved as beautifully as they could have been preserved in an herbarium. They resembled more closely the ferns of New Zealand or the Hebrides than the ferns with which we are familiar. Some of these ferns grew to the dignity and beauty of the palm-tree itself. One species was peculiar, having only two leaves at a time. We find sometimes in the coal-beds things looking like enormous brooms, which are tree-ferns, with roots sent out to straighten the stems.

We also find in the coal formation varities of pine, the wood of which much resembled our modern pines. It is remarkable that the pine is widely diffused at the present day; and it is not wonderful, therefore, that they should have existed in the carboniferous period. These pines have features more nearly resembling those of Australia and New Zealand than those of our climate. When wood is buried in the earth and its cells filled wfth stone, and the wood becomes coal; and this is the form in which we find these fossil remains. By removing the mineral we can observe the vegetable structure of the plants, and determine their character. Next to the soil on which we tread, the most valuable substance we have is mineral coal, which is derived from the plants of the carboniferous period. A bed of coal is usually composed of the remains of the trunk and bark

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of sigillaria trees. Examining coal with a microscope, after proper preparation, we can see the structure of the wood from which the coal was derived. Of eighty-one distinct seams of coal in Nova Scotia, every one but two or three had sigillaria, either in the coal or immediately above or beneath it. The top of a coal seam is merely the debris of the last forest that grew on this swamp where the coal was produced. Great Britain annually consumes 100,000,000 tons of coal, and we know of nothing that will supply its place. The consumption of coal in America is already equal to the labor of 150,000,000 horses, and our coal beds are as yet hardly opened. All this power is extracted from the sunbeams of the paleozoic period. (Applause.)

What did these magnificent forests grow for? There seem to have been no higher animals to enjoy them. We know of no birds that lived among their branches. We know of a few insignificant reptiles that crawled beneath them but we know of nothing higher in that age. What were they created for? For two great purposes. First, to purify the atmosphere so that it might be made suitable for the higher animals that were to live in a future geologic period; and that very process of purifying the atmosphere was made means of laying up those enormous stores of fossil fuel upon which so much of our modern civilization is based. See how grand are the economies of nature, preparing far back in geologic periods before man existed, for the existence of the present state of the arts in the world.

Next to coal in its value comes iron; and although we are not so dependent upon the coal formation for iron as we are for coal, still we get an immense quantity of iron from the carboniferous rocks accumulated by the agency of these very plants; for as they went to decay, and were converted into coal they helped to gather together the particles of iron out of the clays and sands, and to store them up for us in iron ore. Therefore we owe to the growth of those old forests not only our coal but a large portion of our iron. And whether we look to the value of the coal in boiling the teakettle of which Prof. Silliman spoke to you in the last lecture or in the use of the iron which makes our iron horse, and the steam engine of our factories, we owe it all to the primeval plants, or rather the Maker and Creator of these old plants.

Now let me trace these plants a little further back than the period of the coal formation. If we go back from the carboniferous rocks to the Devonian, we shall find a different flora, which no doubt helped to purify the air, and prepare the world for the carboniferous flora. We have in Canada a bed of coal two or three inches thick, belonging to that epoch, and it is the only one I know in America. In this drawing, some of the plants of that period are represented; and here you find the sigillaria, the lepidodendron, the calamites, the pines, etc., as in the later period; so that you see that the Devonian flora was really not very different from that of the carboniferous period. The species are mostly different but the generic forms are the same. As a whole the Devonian flora may be characterized as less massive and magnificent, more delicate and slender in its proportions; not less beautiful but less useful perhaps in the accumulation for us of vast stores of fuel. If we go down below the Devonian rocks into the Silurian, we find a few plants; but in the lower Silurian formation we hardly find any traces of plants. Nearly all the rocks known to us of that age were marine rocks. Prof. D. was not hopeless of the eozoic period even. We have as yet no plants there; but we have found carbon. We have found plumbago; and even in later formations the remains of plants have sometimes been converted into blacklead in the eozoic strata, occurring in beds, so as much to resemble the remains of plants. They have been sea plants. If they were land plants we may guess what they were—anophytes and thallophytes, gigantic mosses and gigantic lichens. If we were to walk among those ancient forests of mosses, if they really did exist, we should be in a world something like what this would appear to an insect creeping upon the mosses of our woods.

I have given you but a faint outline of a great subject, on which treatises might be and have been written, which would afford the material for a course of lectures more interesting than a single one can possibly be. The chief interest of the subject, no doubt, is to the botanist and geologist. The vegetable kingdom now is most beautiful and most varied, especially when we look at it as presenting forms of plants adapted to every climate and every situation upon earth, all of them finding their proper place and their own due season. But the subject before us carries us back into geologic times, and shows us a plan too large to be realized on one earth.

The plan of the Creator was so vast that the whole surface of the earth was not big enough to hold it. It required a series of earths, one after the other, to develop it, just as it has required a series of ages to develop the history of the human race. We have in these old plants something that adds enormously to the variety of the vegetable kingdom; something that shows us how small is our own knowledge, and how great and capable of extension is the plan of the vegetable kingdom. And when we consider further that we know of these fossil plants only what their remains have taught us, it affords a widening field of wonder and of thought. As it is more interesting to the botanist to go out and collect plants for himself, than to study them in the class books, so this subject is of the deepest interest to those who will examine the primeval flora and the coal formations; who will split open the rocks and see the forms that no one ever saw before, and perhaps make discoveries of facts which the world never knew before concerning that remote period of time. I must plead guilty as a fossil botanist—I mean a botanist studying fossils [laughter]—to having the deepest interest in this subject. And it arises in part from the very fact that different names are sometimes given to the same plant—as the tree is called sigillaria, the root stigmaria, and the nut still another name; and it requires much observation and study to discover that these different names all belong to what was really one and the same plant. As our knowledge increases we may be able to dispense with many of these old names, which is more than can be said of modern botany.

What would we have done without these old plants, without this great provision made for us in primitive times before man existed upon the earth? These plants form a part of the same plan to which we belong, and undoubtedly that plan existed at the time these old paleozoic plants grew.

And now, I may say, even in this Christmas time, as we gather around the hearth, although our coal fire does not burn, and crackle and blaze like the old yew log of our ancestors, yet the trunks of

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our old sigillaria, burning upon our hearths tonight, send forth a quiet, kindly look, befitting their great age and long buried in the earth. And the happy hearts that gather around the Christmas fireside may thank God that we have had these great stores prepared for us in the times of old, and that we have hearts and minds fitted to enter somewhat into that great plan which stored them up, and for the enjoyment in a measure, even of the beauty of the plants that lived so long ago.—*Reported for the Scientific American.*

The First Spring Flower.

Different writers have named different wild flowers as first to appear in the Northern states. John Burroughs says that the hepatica is the earliest, and Bryant, in one of his poems has immortalized the yellow violet, *Viola rotundifolia*, as first, while other writers have given the honor to the beautiful little trailing arbutus—New England's own Mayflower. All of course exclude the skunk-cabbage, and such blossoms as the pussy-willows and the hazel and silver-maple blooms, which are not in the general acceptance of the term, true "wild flowers."

In the latitude of southern New Hampshire, where all my botanizing has been done, the Mayflower is certainly the earliest beginning to show its blooms the first of April (I have gathered flowers the 9th of the month) and lasting until the middle of May, and some seasons I have found flowers in cool, shady woods as late as June. Farther south it appears earlier, and Bryant in writing of southern New England in his poem "The Twenty-seventh of March" speaks of "tufts of ground laurel" which is another very pretty and expressive name for the flower.

Its generic name, *Epigæa*, is composed of two Greek words signifying "upon" and "earth" describing the habit of trailing along the ground. Its specific name, *repeus*, also refers to the same characteristic. Trailing arbutus, its commonest name, was probably applied to it from some resemblance to the arbutus tree, a tropical member of the Heath family to this also belongs. As I have already said, ground laurel is a name by which it is known in some parts of the country, and surely the "crown of laurel" bestowed on the victor in the ancient games of Appollo was no more beautiful than is a garland of the tufts and stems of this, our loved herald of the flower procession. But of all our names for it none is so dear as Mayflower, although April-flower might be more appropriate to its time of blooming.

"How thrilled thy smile when on the rockbound coast
The wearied Pilgrims found thee blossoming."

Yes, ever since the first *Mayflowers* were plucked by our forefathers at Plymouth, we have known and loved it by that name—the most beautiful, the most expressive of them all.

Its habitat cannot be set down with surety, except that it seems to delight in a sandy soil beneath the shade of pines. But one may look for it there and look in vain, for it cannot be depended upon, appearing as it does, now in open fields and pastures, and then in dark cool woods, now on the sandy hilltop, and again on the very edge of the meadow bog. Throughout its range may be found large areas, even whole townships, where it does not grow at all, while in other regions it is very abundant, growing in all sorts of places, woods, fields, pastures, and roadsides occupying all available space.

None of our flowers have been noticed so much by our poets, and none is so universally loved as this. Perhaps its earliness may be responsible, in part, for its popularity, but I am inclined to believe that its delicate, retiring, faintly pink-tined flowers, and its soothing perfune would make it a general favorite, whether it opened its eyes in the sunny springtime, the balmy summer, or the hazy autumn.

C. H. Chesley,
South Barrington, N. H.

An Intelligent Parrot.

The following parrot yarn is going the rounds, which if only true, would add new testimony to Polly's intelligence:

A man whose niece had coaxed him to buy a parrot succeeded in getting a bird that was warranted a good talker. He brought it home, and, after putting it in a cage, stood before it and said: "Say uncle, Polly!" The bird did not respond and after repeating it a dozen times or more with no better success, the uncle put his hand into the cage and, grabbing the bird by the neck, shook him until his head wabbled around, all the time yelling to him: "Say uncle, goll darn you, say uncle!" The bird looked limp and lifeless, and disgusted with his purchase the old fellow took the parrot out into the yard where he had a coop of thirty chickens. Thrusting the half dead bird in with the chickens, he exclaimed: "There, by gosh! You'll say uncle before you get out!" The next morning the uncle went out to see how the parrot was getting on. Looking into the coop he counted twenty-nine dead chickens, and in the centre of the coop stood the parrot on one foot, holding the thirtieth chicken by the neck, and shaking it till its head wabbled, and screaming: "Say uncle, goll darn yer, say uncle!"

The Mineral Production of Canada.

Dr. Dawson, Director of the Geological Survey of Canada, has completed his annual statement of the values of the mineral productions of Canada for 1895. The total value of the production as closely as could be arrived at, was $22,500,000, or an increase of $1,700,000 over that of 1894. From 1886 to 1893 the respective value of each year was:—1886, $12,000,000; 1887, $12,500,000; 1888. $13,500,000; 1889, $14,500,000; 1890, $18,000,000; 1891, $20,000,000; 1892, $19,500,000; 1893, $19,250,000.

*** A very interesting collection of ore has been received at the Geological Survey by Dr. Dawson, Director. It is a sample of auriferous ore from Johannesburg, having been taken from the Ferriera mine at that place. The ore differs from all other that is worked for gold and will be of special value to the geologists in their survey for the purpose of comparison. It is a conglomerate formation highly solidified.

J. W. Miller,
Rimouski, Que.

The Nebraska City Naturalists' Association announce a course of lectures on the natural sciences. The faculty of the University of Nebraska and surrounding states will furnish the speakers. These lectures will be practically free and are not only for the benefit of the Association but all who may desire to attend. The first lecture will be given shortly by Prof. Erwin H. Barbour of the Nebraska University.

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L. W. STILWELL,
Deadwood, S. D

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VOL. II. No. 9. ALBION, N. Y., MARCH 28, 1896. Whole No. 61.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 25 words. Notices over 25 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

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FOR EVERY 20c sent me before April 20th I will send you 35c worth of fine foreign stamps. For every 50c I will send you $2.50, catalogue value. ERNEST H SHORT. Albion, N. Y. O

DATAS:—We have datas. The finest out. All kinds, egg datas, skin datas, labels, etc. To anyone answering this ad. we will send postpaid our No. 2 Standard egg data, size 3¼x5½ in. on tough bond paper, with your name and address printed thereon; 100 for thirty cents, 1000 for $2.25, samples free. We can make you good terms on datas printed to your order. THOS. H. BLODGETT, Galesburg, Ill. O

BOTANICAL:—Parties wanting herbarium specimens of California plants will please correspond with me and obtain particulars as to names of plants collected, prices, etc. L. JARED, Estrella, Cal.

MATTESON & MATTESON, Turner, Org., Pheasant breeders. Birds or eggs sent safely to any part of America. The Chinese Ring-neck a specialty. 61-2t

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SWEATER:—A navy blue, turtle neck sweater, hand woven, Australian wool, large cape collar, double front. Cost $6.00 first of March, for $3.75. A. WELLS KIRKPATRICK, 212 Ashmont St., Boston, Mass.

BOOKS:—Scientific, educational, standard and travel to exchange for specimens or cash. W. HARVEY McNAIRN, 4 Harvard Ave., Toronto, Can.

EGGS:—Oregon taken, first-class. I will sell or trade for books on ornithology or a shot gun (breech loading). All my duplicate sets. Write for list with stamp. S. REY STRYKER, Milwaukee, Oregon. 61-2t O

SPECIAL ATTENTION:—One lot of southern Iowa bird skins, 300, for sale cheap, 135 species. Write for particulars. WALTER G. SAVAGE, Hillsboro, Iowa.

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A COLLECTION of about 425 first class single eggs (some with data) for sale. Many rare ones. List furnished. All who mean business write to J. K. AUMACK, Lock Box 907, Ballston Spa, N. Y.

MEXICAN WATCHMAN'S WHISTLE:—Made of clay, new, a great novelty and curio, a regular ear-splitter. Just the thing and very appropriate for a collector's whistle. Prices prepaid, each 15 cts.: 2 for 25c; 5 for 50c; 12 for $1.00; 100 for $6.00. FRANK H. LATTIN, Albion, N. Y.

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OPALS, Minerals, Cut Gems and Natural History Specimens. Will buy, sell or exchange. List for stamp. ROBERT BURNHAM, 15 Chestnut St., Providence, R. I. 51-25t

POSTAGE STAMPS bought and sold. Good U. S. and Departments 25 per cent. discount; Foreign 40, 50, and 60 per cent. discount according to quality. Cash with order or satisfactory reference. LOUIS H. PALMER & BRO., Oak Park, Ills. 58-4t

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Stations.	A.M.	A.M.	A.M.	A.M.	P.M.	P.M	P.M
Rochester.....			8:00	10:30	2:20	5:35	10:00
Albion		7 00	9:10	11:35	3:25	6:50	11:06
Lockport.....		8:05	10:05	12.22	4:20	7:40	12:00
Susp. Bridge ..		8:45	10:46	1:00	5:05	8:20	12:85
Niagara Falls.		9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....		8:55	10:56	1:25	5:15	8:45	

EASTWARD.

Buffalo.....		6:25		11:00	1:30	5:00	5:5(
Niagara Falls.		6.35	8:05	11:18	1:40		6:00
Susp. Bridge .		6:45	8:10	11:25	1:48		6:05
Lockport.....	6:00	7:25	8:50	12:00	2:25	5:55	6:48
Albion.....	6:50	8:15		1:00	3:25	6:45	7:50
Rochester.....	8:00	9:30		2:05	4:35		9:00

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My Boyhood Days in Spring.

DR. MORRIS GIBBS.

How oft' in boyhood's days, in years long pas'd,
When chilling winds fled from the vernal sun,
And birds from southern haunts returning fast,
Proclaimed that dreary winter then was gone—
That I, a youth of that ecstatic hour
When Nature opens first to youthful view;
Turning us by a simple bird or flower
From indoor ways to fields and pastures new:
Then walked in boundless freedom, wood and plain
And gathered Nature's wonders from the lea,
With feelings touched by happiness and pain;
Of thoughts of past and of futurity.

Each bird was then a wonder to my eyes,
Each brook melodiously babbled a new found joy,
The leafy tree which in the zephyrs sighs;
All! all, were rapturous to me when a boy.
Watching; wondering, with keen int'rest bent
On learning of the mysteries of the wood,
Unconsciously my spirit underwent
A change, akin to happy solitude.
Farmore to me than ways of city strife,
And deeper in my heart than schools and books,
Were pleasures of the days of that new life
Spent musingly in fields and forest nooks.

Oh, gentle Spring! with zephyrs soft and low—
Wafted o'er beds of fairest woodland flowers;
Where birds of silvery tongue are floating through
The ever pleasing leafy, fairy bowers.
Charmed season of the year, of flower and song;
Season of merry-heartedness and love;
When fleecy clouds through azure drift along,
And poets to woo their muse then seek the grove.
The muse, who by her soulful, innate power
Oft' favors rarest thoughts, all evil spurns;
A gift of Heaven's highest, richest dower,
And from our baser thoughts our fancy turns.

Alone in contemplation most profound,
I walked by river's brim, nor cared for friend
To lure me from my thoughts, while all around
The voices of the wood with sweetness blend.
The bell-toned notes, as pure and fair
As ever Philomela strained, are heard
From wood thrush, shy, secluded bird, the air
Above is filled from the throats of warblers poured.
The winter wren, diminutive proof of song
Concealed, is caroling in bold disdain
Rivaling the gushing grosbeak's notes,
Accompaning the vireo's refrain.

Again in fancy I visit darken'd woods
At early morn and see the squirrels run
About the trunks, and watch their varying moods
Of frolic; the birds of day have just begun
To twitter, and still the owl looks for his prey;
The bat wheels fast o'erhead in freshened air;
O wave of light heralds the approach of day
And active life returns with eastern glare.
The birds burst forth in chorus rich and rare!
The hum of many insects on the wing
Is heard as from the opening flowers they share.
Boy, birds and all are joyous in the spring.

The New York Botanical Garden.

With the opening of spring, work will be prosecuted on the New York Botanical Garden, whose managers propose to make it one of the finest places of the kind in the world. The plans of the garden have been formulated by Cornelius Vanderbilt, president of the garden, President Seth Low of Columbia College, William E. Dodge, Addison Brown and Prof. N. L. Britton, and preparations to carry these into effect have been completed. It is expected that by the end of the warm weather great advances will have been made toward beautifying the region set apart for the garden.

The garden will comprise 250 acres appropriated from Bronx Park, near the Bedford Park station of the Harlem Railroad. The land abounds in natural beauties, which will, of course, be preserved.

A building with three stories and a basement, and having a total floor space of 90,000 square feet, is to be erected near the entrance to the garden for use as a museum. It will also contain rooms for a library, an economic museum, herbaria, laboratories and also apartments where students may study special subjects.

An immense horticultural house of iron and glass, covering an acre of ground, will be another feature of the garden. A central dome 60 feet high will cover the palm house, and smaller buildings of similar construction will be erected for nurseries and rain shelters.

The trustees of Columbia University have agreed to deposit its herbarium and botanical library in the museum building and the mycological herbarium of J. B. Ellis, of Newfield, N. J., will also be preserved there. Lectures will be delivered in the museum, and the work of the garden will be published from time to time in pamphlets.

Three miles of stone driveways will be constructed within the garden, and two driveway bridges, besides many foot bridges, will span Bronx. Footpaths will afford access to every part of the garden.

A temporary nursery has been established in the garden, and about 2,500 trees and shrubs are

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ready for transplanting. The native flora in the garden will be preserved. The trees will be carefully labeled. Aquatic and bog plants will be cultivated in the Bronx River and on the marsh land in the garden.

The engineers have surveyed the garden and made topographical maps on a scale of 50 feet to the inch, showing every detail of the garden. These will be shown on the evening of March 26, at the reception of the New York Academy of Sciences, in the American Museum of Natural History. It is expected that several years' time will be required before all the plans for the garden can be realized.—*New York Times.*

California Borax Mines.

Though every now and then reports come from the desert of rich finds of gold and silver, yet the greatest industry of Death Valley and the desert is the mining and working of borax. Twenty years ago borax was first discovered in California, west of the Slate range, seventy-eight miles from Mojave, the discover, John W. Searles, forming a company known as the San Bernardino Borax Mining Company, erected works which have been in constant operation ever since.

The borax in the crude state forms a crust over the marsh. This crust is removed, hauled to the works and placed in solution in immense tanks heated by steam. After allowing the solution to settle, it is drawn off into cement vats, where it is allowed to crystallize. This operation is again repeated, when the borax is ready to be sacked and shipped to market. After the removal of the borax from the marsh, crystals of tincal again begin to form, which are worked but once, when they are in a salable condition. In order to facilitate this operation, water from the marsh is pumped into large tanks, in which the tincal forms.

These works are models of mechanical construction, and are the best equipped on the desert. To the uninitiated, borax working is but a repetition of boiling, settling and crystallizing. The fuel used is crude petroleum, which is hauled in huge tanks from Mojave.

The teams used in the transportation of the refined product are curiosities in their way—a wonder to the tenderfoot and a surprise to the teamster. As these wagons are the greatest in existence, carry the heaviest loads and are seen no other place, a description is in order. The hind wheels are seven feet in diameter, front wheels five feet; hubs, eighteen inches in diameter by twenty-two inches in length; tires, six inches wide and an inch thick; steel axles, three and one-half inches in diameter; bed, sixteen feet long, four feet wide and six feet deep. Each wagon weighs about 8,000 pounds and is capable of carrying 20,000 pounds at a load. Two wagons loaded with borax and an oil tank on a third wagon completed the train hauled by the borax team. The team consists of eighteen mules and two hores—twenty animals in all, which are driven by a bell cord, used as a jerk line. A carload (40,000 pounds) of borax is hauled each trip from the works to Mojave, and a tank of oil and two loads are hauled on the return trip.

It takes eight days to make the trip, and in nearly twenty years not a trip has been missed. Stations at which water can be had, and where feed is stored, have been erected for the borax teams to put up. The borax company has done much to assist in the development of the desert, as water is furnished free of charge at all their stations.

From the borax mine, twelve miles from Daggett, wagons of the same style and teams similar in makeup are used by the borax company. Not all the borax of Death Valley and the desert is found in marshes, and all the marshes, while having the same appearance, do not contain borax.

In Furnace Creek canon of the Funeral mountains, and in the Death Valley marsh, borax is found in the shape of cotton balls, while in the San Bernardino Company's march none of these are found. The cotton balls are borate of lime and are scientifically known as urexite. On taking them from the ground they can be pulverized easily, but after exposure to the air they become very dry and hard. They become so hard that it is necessary to put them through a crusher.

For months after the discovery of borax hundreds of prospectors braved the terrors of Death Valley, and many left their bones to bleach in that terrible sinkhole. Borax was searched for in unheard of localities, but it was only known to exist in marshes and beds of old lakes. It was not until the discovery of silver in the Calico mountains that borax was known to exist in deposits or veins. A miner, more curious than his fellows, had a piece of white looking rock assayed, and made the wonderful discovery that hundreds of prospectors had traveled over a vein of boracic acid more valuable than any marsh then known. This was a set-back to all preconceived notions of borax mining, and the supposed-to-be valueless white rock of the Calico mountains became suddenly valuable. This is only another case of where the values at home were overlooked for the much-talked-of treasures of a far-off land. The deposit at Calico is owned by the Pacific Coast Borax Company, and the product is shipped to their works at Alameda for reduction.

Another and larger deposit of the same class was found at Monte Blanco, in a branch of Furnace Creek canon, but its great distance from a railroad made the working of it an impossibility.

In Death Valley are the rotting remnants of two borax works—institutions which promised, for a time, to make their owners rich. With a fall in the price of borax and the establishment of more accessible rivals, abandonment was forced upon the owners. The works north of furnace Creek, which were erected to utilize the product of Winter's discovery, closed in 1888, after a run of five years. The Eagle works, erected at a marsh belonging to a Frenchman named Daunet, have also been closed down for several years.

Throughout all this country, with the exception of Death Valley, may be found the stakes of the railroad surveyor, and several practical routes for a railroad have been found, though none have yet been decided upon. At the time of the discovery of borax in California, the wholesale price was 50 cents a pound. At present (1894) it is worth about 8 cents. Over 20,000 tons are used annually, about one-third of which is produced in the United States.—*Scientific American.*

Dr. H. H. Rusby.—The famous botanical collector, who has done so much for our knowledge of southern botany, has started to explore the Orinoco region.—*Meehan's Monthly for April.*

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The Termites or White Ants of Africa.

The scientific traveler, Max Buchner, tells us how we may picture to ourselves the savannas of Central Africa: "First sprinkle a few million brick-red, irregular pyramids of the termite or white ant over a brick-red surface, in the proportion of, at least, five to the hectare. Next take about four times this number of trees, and distribute them so that there shall be twenty, more or less, to the hectare. Then distribute, in like proportion, an equal number of Bushmen. Finally, fill up the intervening spaces with clumbs of high grass, just far enough apart to render visible the red earth between. Do this and you will have a faithful representation of the open African forest, but little influenced by the destructive hand of man."

The presence of these white ant pyramids is the characteristic feature of the African landscape. The builders of these structures are not ants; but belong to the much smaller family of termites. There is scarcely an insect so thoroughly hated by man as the termite, and the hatred is fully justified. "There are regions in Africa," writes a traveler, "of which it is safe to say that if a man with a wooden leg were to lie down to sleep at night, othing of the leg would be visible in the morning save a little sawdust." The termites gnaw away everything; the balconies and posts of the houses, tables, chairs, wardrobes, books, leather, cloth—in fact, little comes amiss to them except iron—though, strange to say, on the authority of Franz Leuschner, they will not touch the European pine and fir timber brought to Africa for building purposes. The evidences of the destructive labors of the termites are to be seen on every side; but the creatures themselves are rarely seen. They steal sneakingly to their labors. They are all blind, with the exception of the king and queen, and all defenseless except the soldier caste, which constitutes about one or two per cent. of the population. To escape starvation they must leave their subterranean homes or pyramids in search of dead wood, and, because of their blindness, they render themselves invisible as the best mode of defense.

If one has an opportunity to observe the insect in his work of destruction, the sight is really a most remarkable one. Here is an opening in the earth. A little head appears in it, with a pellet of clay in the jaws; the pellet is laid down, and soon another head appears with another pellet covered with a vicid salivary secretion, by means of which the pellets are fastened together. In this manner, by incessant toil, a small clay tube is constructed, and prolonged until it strikes against a piece of dead timber, the soldier termites guarding the opening from hostile insects the while. The termites then gnaw their way into the timber, eating or removing the whole inner contents, leaving only a thin outer shell. These tubular passages, made by the termites, are even more wonderful than their pyramids. They are about the diameter of a small gas pipe, and are frequently carried in a zigzag course by the termites up the trunk of a tree in their search for a dry branch. One may travel for hours and not find a single tree without one of these passages.

In spite of their destructive proclivities, the termites perform much useful work. There is a certain neatness in the open park-like scenery of Central Africa which strikes one immediately. It gives one the impression that it is scrupulously swept and cared for, and one asks himself, involuntarily, what good fairy maintains such perfect neatness and order in the wilds? There are indeed, forest keepers of various species, who are continually occupied in the removal of all dead animal matter, from the fallen elephant to the dead fly, and who bury in the purifying earth what they cannot consume. What these do for animal remains, the termite does for the vegetable kingdom. Every trunk, branch, twig or old bark layer the moment it is smitten with death, is attacked by the white ants who subsist on it, and whose numbers are limited only by their means of subsistence. The balance between them and the vegetable kingdom is thus maintained by natural law. If we examine their pyramids, we find that the interior, contains innumerable chambers connected by passages. There are store rooms, breeding rooms and nurseries. The chamber of the queen is near the ground, and frequently below the surface. Each of these settlements may be taken as representing a kingdom whose people are divided into distinctive castes, with division of labor. First there are those engaged in the perpetuation of the species. There is only one queen in each settlement, and she when fertilized, is enlarged to a cylindrical shaped figure, several centimeters long, with nothing in her appearance, except her head, to suggest what she is. She is carefully watched and tended and feed by her subjects, and lays eggs upon eggs, many thousand a day, and that for months continuously. The other casts, are the soldiers, recognizable by their massive heads, and the workers, with the little round heads. The later provide the food and nurse the young, and know how to feed the nymphs, that they can develop a worker into a queen if there is occasion for one, that is, if the reigning queen should die.

The great work of the white ants, analogous to the labor of worms in temperate climates, is to bring up the subsoil clay to the surface, where it sooner or later mingles with the surface soil, and perhaps gets washed away to form new valleys. One must study the works of these little creatures carefully to form an idea of their extent and importance.—*Die Gartenlaube, Leipzig, No. 9; Translated and condensed for the Literary Digest by C. Falkenhorst.*

Dust in Nature.

Without dust there would be no blue firmament; the heaven would be blacker than we see it on moonless nights. On this black background the glowing sun would shine out sharply, and the same sharp contrast of intense light and deep shadow would characterize the surface of the earth. There would be nothing to subdue this sharp contrast but the moon and stars, which would remain visible by day. The illumination of the earth would be similar to that which we observe when looking at the moon through a telescope; for the moon has no atmospheric envelope, and, consequently, no dust in suspension. It is due entirely to the dust that we enjoy our soft, uniformly diffused daylight, for which our eyes are specially adapted; and it is the dust which contributes so much to the beauty of the landscape. But while the foregoing explains how the dust makes the whole vault of heaven light, it does not explain why it is chiefly the blue rays of the white sunlight that are reflected, and only to a small extent the green, yellow and red rays. This is dependent on

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the size of the dust particles. It is only the finest of them that are borne by the air currents into every stratum of air, and it only these fine, widely diffused dust particles that are of any significance in this connection. Now, let us consider the mechanism of light and the extreme shortness of the ether waves which constitute its essence. These waves, although all microscopically small, vary considerably in length. The fine atmospheric dust includes many particles large enough to reflect the short blue ether waves, fewer particles capable of reflecting green and yellow, and still fewer large enough to influence the long red ethereal waves. The red light, consequently, passes through the great majority of the dust particles comparatively unhindered; the blue rays on the contrary, are intercepted and diffused, and so become visible. This is the reason that the finest dust—and so, too, the firmament—appears blue.

So, then, the finest dust appears blue. You may observe that the wreath that curls upward from the burning end of a cigar is blue, while the smoke drawn through and exhaled is whitish. The particles in the latter case have united and become large enough to reflect white light. So, too, in the county, on a clear day, the sky is blue; but in the city it appears whitish, because of the greater number of coarse dust particles in the air. It is especially on mountain heights that the sky is so intensely blue, because the rarefied atmosphere supports only the finest dust particles. At great height the sky would be almost black, if there were no dust particles in suspension. We see it grow pale as we turn our eyes to the lower strata of air toward the horizon. But why is the sky in Italy and in the tropics so much deeper blue than with us? Is the dust finer there? As a fact, it really is. Not that finer dust rises there; but in our climate the dust particles are soon saturated with water vapor, which makes them coarser. In warmer regions, however, the vapor retains its watery character and does not condense on the floating dust. It is not until the aerial currents have borne it to higher and colder regions that it is condensed to clouds.

This brings us to the most important role played by dust in our atmosphere: its influence in determining rainfall, due to the fact that vapor fluidifies upon the dust particles. It may be accepted as beyond question that of all the water evaporated by the sun from the surface of land and sea, not one drop returns which has not condensed upon a particle of dust as a nucleus. This is easily demonstrated. We fill a large flask with air which has been filtered through cotton waddings until all the original dust is driven out and the flask is full of dustless air. Into this dustless air turn a current of steam from a kettle and you will find it transparent, and, therefore, invisible. Not a trace of the cloudy appearance we associate with steam. The only thing noticeable is that the inner walls of the flask begin to drip; the vapor condenses here as it cools, because there is nothing else for it to condense on. But blow ordinary dust-laden air into the flask and the vapor at once assumes the familiar cloudy appearance due to its condensation on the dust particles and it begins to rain in the flask. The reason for this is that the vapor condenses on the dust particles and freights them until they sink as rain drops.

Without dust, then, we would have no fog, no clouds, no rain, no snow, no brilliant hued sunsets, no cerulean sky. The surface of the earth itself, the trees, the houses, along with man and beast, would be the only objects on which the vapor could condense, and these would begin to drip whenever the air was cooled sufficiently. In winter everything would be covered with a crust of ice. Our clothes would become saturated with water condensing upon them. Umbrellas would be of no avail. The vapor-laden atmosphere, moreover, would penetrate to our rooms and condense upon the walls and furniture. In short, the world we live in would be quite another world if there were no dust. Since scientists began to realize the important part played by dust in the economy of nature, measures have been taken to count the particles in a given space. In London and in Paris at the surface a cubic centimeter has been found to contain nearly a quarter of a million particles. On the top of the Eiffel Tower there are about half as many, while in the high Alps there are only about two hundred particles to the centimeter. A great deal of the dust at high altitudes is comic dust, consisting like the meteorites, of carbon and iron.—*Die Gartenlaube (Leipzig).*

Spain's Big Meteorite.

In our issue of February 22 we called attention to the bursting of a great aerolite over Madrid on February 10. The Spanish newspapers have now reached this country and give full details of the event. This phenomenon is seldom observed on so startling a scale. The sky was cloudless, the streets were just beginning to be thronged with traffic and pedestrians, when the deafening sound of the explosion was heard. Those who happened to be looking at the sky say that the instant of the explosion there was a vivid glare of blinding light and then there instantly appeared at the place where the disturbance originated what looked like a cloud of white and bluish tint, bordered with red, which moved east at a tremendous rate, leaving behind a thin train illumined by the sun that may have been dust particles. The whole city appeared to be shaken as if by an earthquake, and the agitation of the atmosphere was shown by the rapid fall and rise of the barometer. The terror inspired by the occurrence was very great, particularly among the ignorant and superstitious. Many people did not recognize the origin of the phenomenon and thought some terrible catastrophe had occurred. The energy of the disturbance probably equaled that of the explosion of a large powder magazine. Many windows were shattered and walls injured, but fortunately no one was killed. The aerolite was visible over at least three-fourths of Spain as it shot through the air above the peninsula. Some damage was done at places along its route, for the great meteorite partly disintegrated on its way, and the incandescent fragments that showered npon the town of Lograno set two buildings on fire, and at Burgos three free fragmeuts fell among the houses. Other pieces of the stone that were fluug off near Madrid were picked up while still hot.—*Scientific American.*

A large collection of 17,000 stuffed birds and many series of bird skeletons has been bequeathed to the British Museum by the late Mr. Henry Seebohm, the naturalist. It is the most valuable gift made to the natural history section of the museum in a quarter of a century. Its ornithological collection is now the largest in the world, consisting of 300,000 specimens.—*Scientific American.*

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Natural Science News.

ADVERTISING RATES.

Only 5c per norpareil line, each insertion. 12 lines per inch.

Nothing inserted for less than 25 cents

SPECIAL RATES as given below will be made to parties using a large amount of space, either in a single issue or any number of issues throughout the year. The only condition being that the space contracted for must be taken up within the year; and can be used in large or small quantities, as their business requires.

100 lines	4½c	per line.
200 "	4	"
300 "	3½	"
500 "	3	"
1000 "	2½	"
2000 "	2	"

A column contains 120 lines; a page, 360.

A little two-line ad. would use 104 lines during the year, entitling the purchaser to the 4½ cent rate, and cost only 9 cents per issue.

A small one inch ad. run one year would use 624 lines and would entitle the purchaser to the 3 cents per line rate, and cost only 3* cents per issue.

A 3½ inch ad run one year would use 2,028 lines and would entitle the purchaser to the 2 cent rate, and cost only 78 cents per issue.

It is the only publication in America in which dealers and collectors are sure of having their notices placed in the hands of all working Naturalists almost as soon as if done by addressing each by letter—while in an ordinary monthly publication there is natural delay of from 10 to 30 or more days.

In the NATURAL SCIENCE NEWS this delay will be obviated.

All copy must reach us at least *three* days prior to date of issue in order to insure insertion in a given number.

You Havn't an Idea

By seeing any other Geodes from any where else of the unique beauty of this new find of white CHALCEDONY GEODES on the Cheyenne River, S. D. Inside are sparkling crystals of pure quartz, selenite, microscopic, loose, perfect rhombs of calcite, milky, cfrost like, snow ball forms, or lavendar tinted;—7 kinds, all postpaid, for $1.75. Opened in halves and closed up and tied for you. Good size. Single Geodes, 15, 20, 25, 35, 40, 50. Nothing equal to them found in the world in my eleven years in the trade. Tons of fine MINERALS in stock for collectors and schools. ARROW HEADS sent on selection on catalogue terms. White River and Pierre Groups of FOSSILS. INDIAN RELICS of every sort. 200 subjects INDIAN PHOTOS. Stereo. Views of ALASKA and YELLOWSTONE PARK scenery. Catalogue for stamp.

L. W. STILWELL,
Deadwood, S. D

Better Than a Shot Gun!

A Rare Chance

to obtain a high-grade Opera or FIELD GLASS at a very low price.

The entire stock of Queen & Co., Inc., being offered at great reductions, including some special forms for Naturalists.

Send for circular No. 481 giving full descriptions and prices.

J. G. GRAY, Assignee for

QUEEN & CO., Inc.,

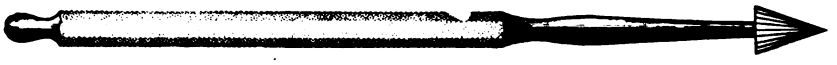
1010 Chestnut St., PHILADELPHIA.

R-I-P-A-N-S

ONE GIVES RELIEF.

EGG TOOLS! EGG TOOLS!

THE VERY BEST THAT CAN BE MADE.



Set A contains blowpipe, (white metal) a large and small wire drill, 5 datas, only 20c postpaid.

Set No. 1.—Nice blowpipe, drill (machine fine cut) embryo hook, engraved handle, all in pocket case, for 3½c postpaid.

Set No. 2 (See cut.) Contains No's 1 and 4 drills, embryo hook, blowpipe, pointed forceps, nickel plated, in plush lined pocket case, 50 datas, 5 A. O. U. check lists, note book and pencil All of the best, $2.00 postpaid.

CHAS. K. REED, TAXIDERMIST.

And Dealer in all Naturalists' Supplies, Minerals, Shells, etc.,

262 Main St., WORCESTER, MASS.

Grand Public Offer.

GIBBS'S PROCESS OF MOUNTING.

Nine Years before the Public, and growing more Popular each season. Hundreds of testimonials from the Atlantic to the Pacific.

Taxidermy at home and self taught. Learn to do your own work and find an increased pleasure in preserving specimens and in decorating your houses and den. Any one can learn it, and a child can comprehend it at the first attempt. If you do not care to try it, get the Process for your children, wife or mother. This Process is a joy in any household and will please all who follow it.

In order to get my method before the public, and in every part of the U. S. the following offer is made.

If you will agree to mount a bird by my Process and set the specimen on the peak of the roof of a house or other building, or on the limb of a tree, and exposed to wind and rain, I will send you full instructions, and one pound of prepared Compound, enough to preserve 50 small birds the size of a Quail, together with directions to dress and prepare skins with the hair on for rugs, robes and hangings:—All for

50 CENTS

The mounted specimen exposed on roof or tree, will last forever, and be an advertisement for my Process and will secure you applicants who wish to learn this Art, and you can make money as an instructor, as many are now doing.

This offer holds good until May 15, 1896.

Enclose stamps or money order; mention this paper and address

MORRIS GIBBS, M. D., Kalamazoo, Mich.

Talk About Your Bargains!

Just look at these and don't wait until tomorrow before sending in your order:

50 fine varieties U. S. only 30 cents. This packet contains Postage Dues, Special Delivery, Depts. and many others.

1000 assorted U. S., 20 to 30 varieties, guaranteed, for only 10c. Postage 3c extra.

8 var. Columbians only	$ 15
100 var. foreign "	10
50 " " "	05
20 " " "	03
25 " " better grade	06

A mixed packet of stamps cataloguing from $4 to $6 for only $1 00

Postage extra on orders under 25c.

Above prices will only hold good while stock lasts.

MEEKER & LUCAS,
Box 296, Bridgeport, Conn.

Note our Prices on Printing.

5,000 Note Heads	$5.00;	10,000, $9.00
5,000 Good No. 6 Envelopes	5.00;	10,000, 9.00
5,000 Bill Heads	5.00;	10,000, 9.00
5,000 Statements	5 00;	10,000, 9.00
5,000 Business Cards	4.00;	10,000, 7.50

All work and stock guaranteed first class. It will pay you to send your printing to A. M. EDDY, Albion, N. Y.

MINERALS,

Ancient Indian Relics, Stamps and Curiosities.

Price List, Postage Free.

W Perry Arnold, Stonnington, Ct.

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$2.50 for $1.

During the months of April and May I will mail every person sending me $1.00 for a year's subscription to the NATURAL SCIENCE NEWS their selection from goods mentioned in this list to the amount of $1.00. Every subscriber also will receive two coupons, each good for a 25c Want or Exchange Notice. Send in your subscriptions at once—earliest ones are sure to get exactly what they want. Make a combination with a friend—you take the premiums, he the publications, or *vice versa*. Make remittances in most convenient manner. Address plainly and in full.

FRANK H. LATTIN, Publisher, Albion, Orleans Co., N. Y.

EGGS.

Your selection of any species, either in sets, singles or 2d class, listing at $1.00 or under at Lattin's "Standard Catalogue" prices. When selecting this premium you must *always* name extras to be used as substitutes to the full amount of your order.

SCIENTIFIC SHELLS.

Your selection from species listing at $1.00 or under as offered in Lattin's Shell List in his June ('95) BULLETIN. When selecting this premium "extras" must always be named to fully equal the amount of the order.

SHOWY SHELLS.

Any species catalogued at $1.00 or under in Lattin's old pink catalogue—always name a few extras when selecting this premium.

CORALS.

Precious, *Corallium rubrum*, 1 oz. package of polished branches ..... $ 25
Rose Coral, *Manecina arsolata* 10, 15, 25
Organpipe Coral, *Tubipora musica* 10, 25, 50. 1 00
Spike Coral, *Madrepora cervicornis* 10
Branch Coral, *Pocillopora bulbosa* 10, 25
Yellow Sea Fan, *Rhipidogorgia occatoria* 15, 25, 50
Purple Sea Fan, *Rhipidogorgia flabellum* 15, 25, 50
Creamy Sea Fan, *Rhipidogorgia elegans* 25, 50, 75
Purple Sea Feather, *Pterogorgia setosa* 25, 50, 1 00

ECHINODERMS.

Sand Dollar, *Echinarachnius parma* 10
Philippian Urchin, *Loganum bonani* 35
White Spinned Urchin, *Hipponoe esculenta* .. 25
"Aristotle's Lantern" the sea urchins dental apparatus 15
Giant Purple Urchin, *Strongylocentrotus franciscanus* 50
King of the Echinoderms, *Metalia pectoralis* 2 00
Black Starfish, *Echinaster sentus* 35

FOSSILS.

Shark Teeth ..... $ 5
Trilobite, *Calymene serraria* 25, 50, 75, 1 00
Scaphites nodosus 10, 25, 50, 1 00
Polyp Coral 10, 25

MINERALS.

Chiastolite Crystals ..... $ 15
Satin Spar 10, 25, 50
Quartz Crystals, Ark 10, 25, 50, 1 00
Coquina 10, 25
Native Lodestone 10, 25, 50
"Electric" Stone 10, 25, 50
Geodes, Quartz, both halves 50, 1 00
Opalized Wood 10, 25, 50
Meteorites, perfect specimens 25
Ferruginous Quartz, doubly term. crystals 10
Opal, green var. from Wash 10, 25, 50
Opal, Mexican, cut and polished 50, 1 00
Tourmaline, brilliant black crystals 10, 25, 35
Gem Stones, small cut and polished semi-precious stones of almost every conceivable form, shape, size, color and style, ranging in size from ¼ to ¾ inch in diameter, Carnelian, Heliotrope or Bloodstone, Chalcedony, Clouded Agate, Banded Agate, Fortification Agate, Ribbon Agate, Brown Agate, Red Agate, Black Agate, Moss Agate, Agatized Wood, Mocha Stone, Dendritic Agate, Brecciated Agate, Onyx (in great variety), Nicolo, Sard, Sardonyx, Agate-Jasper, Lapis Lazuli, Crocidolite (Tiger eye), Fossil Corals, Wood Agate, Labradorite, Rock Crystal, Amethyst, Aventurine, Cameoes, Intaglioes, etc. etc. Fully one-half of them are suitable for jewel purposes, and if you wanted one mounted to replace a setting in a pin, cuff button, watch charm, ring top, or in other jewelry, your jeweler would charge you all the way from 25 cents to $1 for one of these identical stones (jewelers are buying these stones for this very purpose). When ordering state variety desired 10, 15, 20, 25
1 doz. assorted, my selection, small 60
1 doz. assorted, my selection, choice 1 00

INDIAN ARROW and SPEAR HEADS.

From Oregon, Bird and Jewel Points .. 35 to $ 75
" Miss., Red Jasper ..... 10 " 35
" Ohio ..... 5 " 50
" Illinois ..... 5 " 1 00
" Indiana ..... 5 " 1 00
" North Carolina ..... 5 " 1 00
" Kentucky ..... 5 " 1 00

MISCELLANEOUS CURIOS.

Alligator Teeth 5, 10, 15, 25
Revolutionary Gun Flint 15
Tusk or Wampum Shell 5
Money Cowry Shell 5
Dove Shell from British Guinea, exhibit at World's Fair, 5 for 10
Chinese Horn Nut 5
Beetel Nut 10
Lucky Tooth of Cod 5
Mammoth Porcupine Quill 15
Scorpion in Box 35
Big Tree (Calif.) bark attached to wood 75
Package containing 1 Liver Bean, 12 assorted Sea Beans and 1 Cassia Beans 25
Set of World's Fair Tickets 1 00
Chinese Coin, cash 5
Broken Bank Bill 10
" " " 6 var 50
Chameleon in alcohol 20
Egg of Hammerhead or Leopard Shark 15
" Skate or Sand Shark 5
" Case of Periwinkle 15
Acorn Barnacle 10
" " double 20
Sea Horse, slightly imperfect 25
Hermit Crab in Shell 35
Sawfish Saw, 8 in 35
Curio (Vase) Sponge 35
Young Naturalist's Marvelous Collection, '95 edition, contains nearly 50 specimens 75
Mexican Watchman's Whistle, clay, unique 15
Resurrection Plants 15, 25

FOREIGN STAMPS, ETC.

Packet, 100 var ..... $ 15
" 100 choice mixed, retail 1-5c 35
" 1000 mixed 50
Sheet of 25 selected 1c stamps 15
" " 25 " 2 " 30
" " 25 " 3 " 45
" " 25 " 4 " 60
" " 25 " 5 " 75
Set of 6 var., unused, 1 to 50c, Venezuela, 1880 15
Set, 4 var., used, Chili Telegraph 25
Set, 7 var., unused, Ecuador 15
Set, 4 var., used, Ecuador, 92 10
Set, 20 var., unused, French Colonies 40
Set, 6 var., used, Guatemala, 1886 35
1c unused Guatemala prov., 1886, surch 10
4r unused, Guatemala, 1878 10
½r unused, Guatemala, 1879 10
10c Vermillion, unused, New Brunswick, 1860 25
5c on 3c unused, British Honduras, prov., 1891 10
1c used, British Guiana, 1880 5
Portraits of Rulers 50
Coats of Arms of the World 50
Merchant Flags of the World 25
Gummed Hinges, per 1000 12
Blank Approval Sheets, per 25 30
Popular Album, linen boards, 1200 spaces, 60 ill. pages 15
Philatelists Album, boards 35
" " cloth, gilt 75

SUPPLIES.

Tanning Liquor, 1 qt. bottle of the best, by express at purchaser's expense 75
Tags with strings, long kind, best, per 100 25
Hack or Bone Saw with blade 75
Hand Vise 75
Tweezers, best 25
Catapult or Pocket gun, without rubber .. 15

OOLOGISTS.

15-100 Egg Drill 15
Blowpipe white metal 20
Embryo Hook, polished steel 15
Tweezers best 25
Datas, 100 assorted 25
Trays, white, 4 sizes assorted, per 100, (25 of each size) by express at purchaser's expense 85
Peabody's Field Note Book 25

ENTOMOLOGISTS.

Net, folding with joint handle $1 75
Tweezers, best 25
Disinfecting Cones, per doz 20
Magnifier, 3 legged 75
" nickel pocket folding 35

BOOKS &c.

Apgar's "Key to Birds of N. E. U. S." ..... $ 50
Cook's "Birds of Michigan" 75
Chapman's "Birds of Eastern North America." 3 00
Earl's "Pets of the Household" 50
Ingersoll's "Bird-Nesting" 1 25
Langille's "Our Birds in Their Haunts" 2 25
McIlwraith's "Birds of Ontario" 2 00
Stearn's "Bird Life in Labrador" 60
Bird Preserving and Bird Stuffing 35
Maynard's "Manual of Taxidermy" 1 25
Lattin's "Standard Catalog. of Eggs" (1896) 12
Stearn's "Notes on the Natural History of Labrador" 50
Eberhart's "Elements of Entomology," 40 plates—300 figures 50
Eberhart's "Outlines of Economic Entomology" 50
Eberhart's "Key to the Families of Insects" 25
The Pistol—A practical handbook on its Use and Care 50
Amateur Trapper and Trap-maker's Guide 75
Shooting on the Wing, illustrated, cloth 75
The YOUNG OOLOGIST, Vol. I and II nicely bound 85
THE OOLOGIST, Vol. III and IV nicely bound 75
THE OOLOGIST, Vol. IX, 1892, 298 pages bound 1 00
An Exchange Notice (or a card good for one) in OOLOGIST or NATURAL SCIENCE NEWS 25
A year's subscription to THE OOLOGIST with exchange card 50
A year's subscription, with two exchange coupons, to NATURAL SCIENCE NEWS 1 00
Advertising space in OOLOGIST or N. SCI. NEWS to the amount of $1.00. Should you desire to select this premium and not care to use the space at once a credit card will be issued for the amount which you can use when needed 1 00
PENIKESE, the issues of NATURAL SCIENCE NEWS, containing this valuable serial complete, on Agassiz's famous summer school at Penikese Island, written by an eminent Professor who spent both seasons at the Island 75
THE OOLOGIST, a package of forty (40) back number, all different, *my selection* 1 00

NOVELTIES.

Double Pendant Satin Spar Stick Pin ..... $ 15
Quartz Crystal Stick Pins 25
Brazilian Beetle Stick Pins 35
Agate Brooch 50
Crocidolite Brooch 75
Agate Shoe Buttoner 75
Agate Glove Buttoner 50
Agate, Moss Agate, Tiger Eye, etc., Watch Charms 25
Agate Stamp Box 1 00
Pearl Penholders 35, 75
Pearl Letter Openers 50
Pearl Shell Spoon 35
Pocket Magnifier 35
Shell Napkin Ring 35
" Purse 25
" " fine 75
" Ship, thimble holder with thimble 40
Shell Match Safe 35
" Brooch 25
Flag Stick Pin 10
Chautauqua Pennant Stick Pin 10

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New subscribers to NATURAL SCIENCE NEWS are always in demand and during the months of April and May its publisher will give 50 cents worth of premiums for each new subscriber a present subscriber may send him. This 50 cents worth of premiums must be selected from the list of premiums given on this page, and ten cents must be added to cover the mailing expenses of the present. Remember the new subscriber can accept the $1 premium offer page, and will secure all the perquisites connected with the same and this 50 cents worth of presents is an additional offer on our part made to *present* subscribers who will assist in enlarging the subscription list of our little weekly.

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NATURAL SCIENCE NEWS

VOL. II. No. 10. ALBION, N. Y., APRIL 4, 1896. Whole No. 62.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 25 words. Notices over 25 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

All **copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.**

FOR SALE or EXCHANGE.—English setter bitch, one year old. Want kodak. Natural History specimens and books, fishing tackle, or collecting gun. Make me an offer. GEORGE W. BROWN, Box 262, Ypsilanti, Mich. 61-2t

MATTESON & MATTESON, Turner, Org., Pheasant breeders. Birds or eggs sent safely to any part of America. The Chinese Ring-neck a specialty. 61-2t

"TEXAS" fossils 3 for 10c to any address in the U. S. 3c extra foreign country. Address, R. L. MORE, Decatur, Tex. N.

SNAKES.—I want at once a Boa Constrictor or Python, must be good feeder and *perfectly sound*. Also books on all species of snakes (cheap). Write giving descirption and prices. *R. G.* PAINE, 1416 R. I. Ave., N. W., Washington, D. C. N.

FOR SALE.—Stuffed and mounted pea-fowl 1st class. For exchange: violin for a 5x7 photo outfit. I have also a 5x8 camera, lot of good minerals, fossils, curios, skins, etc., to exchange for a wide angle lens, books on natural history or good offers. R. M. DALRYMPLE, Baker, Ohio. N.

LOWER Silurian Fossils. Will send perfect specimens of *Rhynchonella Dentata, Rhynchonella Capax, Orthis Subquadrata, Orthis Biforata, Strophomena Planumbona, Strophomena Alternata, Strophomena Rhomboidalis, Orthis Emacerata, Orthis Insculpta, Zygospira Modesta, Coelonema Bilix*, for 50 cents post-paid or natural history specimens. LEWIS SMITH, Liberty, Ind. N.

DIANA.—*Argynnis (S.) diana* cheap for cash, or exchanged for North American butterflies not found in Virginia. W. ALPHONSO MURRILL, Staunton, Va. (Blacksburg, Va. after June 1). N.

TO EXCHANGE.—I have large lists of fossils, minerals, sets, Indian Relics and finely mounted birds. I will exchange for good sets or skins and good cloth bound books. Send lists and state which lists you desire to select exchange from. GEO. W. DIXON, Watertown, S. D. N.

TO EXCHANGE.—Sets and singles of this locality to exchange for singles of other localities and showy shells. GEO. ZIMMERMANN, Austin, Texas. N.

FOR SALE or Exchange. Minerals, curiosities, old books, newspapers, letters, receipts, legal papers, all genuine. No reprints. Dates 1828 to 40. Write and make known your wants if you are collecting. All letters answered. GEORGE WALTHER, Rushville, Yates Co., N. Y. N.

"LAKE OF THE WOODS" Gold and other mineral specimens. Send anything you have in the curio line and get by return mail my exchange JNO. R. WERNER, Naturalist, Rat Portage, Ont. N

WANTED:—Parties having pretty or curious tame animals or live reptiles for sale cheap, write ro W. R. WHARTON, Germantown, Phila. Reptiles' eggs, Indian relics, and curiosities also wanted N

MEXICAN WATCHMAN'S WHISTLE:—Made of clay, new, a great novelty and curio, a regular ear-splitter. Just the thing and very appropriate for a collector's whistle. Prices prepaid, each 15 cts.: 2 for 25c; 5 for 50c; 12 for $1.00; 100 for $6.00. FRANK H. LATTIN, Albion, N. Y.

DEAR SIR:—I am anxious to have you see a collection of the Famous Herkimer County Crystals, hence I make you this offer: If you are a subscriber to this paper, let me send you by return mail, post-paid, 36 of these Brilliant Gems: if they please you send me 72 cents. If not satisfactory return the collection and it will be O K. Yours respectfully, A. B. CRIM, Middleville, Herkimer Co., N. Y.

"PLAIN HOME TALK and Medical Common Sense," Foote. A Standard Family Medical Book, nearly 1000 pages, new, cost $3.25. Will exchange for desirable sets or specimens. What offers? FRANK H. LATTIN, Albion, N. Y.

OPALS, Minerals, Cut Gems and Natural History Specimens. Will buy, sell or exchange. List for stamp. ROBERT BURNHAM, 15 Chestnut St., Providence, R. I. 51-25t

POSTAGE STAMPS bought and sold. Good U. S. and Departments 25 per cent. discount; Foreign 40, 50, and 60 per cent. discount according to quality. Cash with order or satisfactory reference. LOUIS H. PALMER & BRO., Oak Park, Ills. 58-4t

RESURRECTION PLANTS:—Have just received a new stock of this wonderful plant, all A No. 1, the regular 25c grade; but while they last will sell at 15c each; 2 for 25c; 5 for 50c; 12 for $1.00; 100 for $8.00. *Prepaid* at these prices. FRANK H. LATTIN, Albion, N. Y.

"NATURAL SCIENCE NEWS," Vol. I complete. Less than ten complete vols. left. Will send you one for only $1.00. Complete your files. Will furnish Nos. 1 and 2 at 10c each. All others 5c each or in lots of five or more 4c each, or ten or more 3c each. (Nos. 1 and 2 are always 10c per copy net.) FRANK H. LATTIN, Albion, N. Y.

FOR SALE OR EXCHANGE.—Malachite, Crysocolla, Chalcedony, Quartz, Azurite, Monazite and Frankline Microscopic slides, Infusorial earth 100 localities, Trap-tufa and rocks for sale or exchange for other minerals or Microscope slides or Infusorial earths PROF. ARTHUR M. EDWARDS, Newark, N. J. O. & N. t

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Albion	7 00	9:10	11:35	3:25	6:50	11:06
Lockport	8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge ..	8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.	9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....	8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....	6:25		11:00	1:30	5:00	5:50
Niagara Falls.	6:35	8:05	11:18	1:40		6:00
Susp. Bridge .	6:45	8:10	11:25	1:48		6:05
Lockport.....6:00	7:25	8:50	12:00	2:25	5:55	6:45
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The Cryolite of Greenland.

The earliest mention of the existence of cryolite that I have been able to obtain is in a mineralogical dictionary published in France in 1809, which says that all the cryolite then known was obtained in small lumps on the coast of Greenland. It appears, however, to have been afterward forgotten. In 1850, during an exhibition of Eskimo tools and products held in Copenhagen under the auspices of the Danish government, Dr. Gustave A. Hartman noticed a white mineral of which the sinkers for their fish nets were made. He analyzed it, and reported it to be cryolite. The Danish government, in the following year, made investigations and discovered a large bed of the mineral on the west coast of Greenland; in latitude 61 degrees 18 minutes. The bed is equally distant from the small colonies of Julianshaff and Frederickshaff, at Ivigtuk (often erroneously called Ivigtut), on the Arksuk Fiord. This bay is accessible to vessels only dnring the early and later parts of the summer, at other times it is full of either pack ice or bergs.

The shores of the fiord are very mountainous, and vessels in harbor there make fast to the rocky walls by their bow, while at their stern they can get no soundings. Such was the place where, in 1865, Dr. Julius Thomsen opened a mine of cryolite. Nowhere else in the world can it be obtained so cheaply, and in large quantities, for it is only found in two other places, Miask, in the Ural Mountains, and on Pike's Peak, El Paso County, Colorado.

The place where the mineral is now worked is about 12 miles up the fiord from the Danish settlement of Arksuk. It is an open cut, 600 feet long by 200 wide, and may be worked from April to October. The way in which they protect the mine in winter is interesting.

If the mine were left unprotected, the water which runs into it would freeze, as it appeared, and solidify in layers, so that by spring there would be thousands of tons of ice, filling the mine, which would take a whole summer to dislodge. To prevent this, on stopping operations in the fall, they flood the pit with water, which freezes on top to about four feet in depth. Then, in the spring, a hole is punched in the ice, the water pumped out, and the remaining ice is easily disposed of. The mineral is found in solid veins in the granite mountains penetrating upward at an angle of forty-five degrees on one side and down beneath the sea on the other. It occurs in two veins, a central portion, about 500x1,000 ft. in section, and a peripheral bed, surrounding the other, and merging into the granite. The line between the two veins is very sharply defined, though there is in some places an intermediate portion, consisting of the minerals of the outer zone, inclosed in cryolite. The outer vein contains nearly all the minerals, including quartz, feldspar, ivigtite, fluorite. cassiterite, molybdenite, arsenopyrite, columbite, siderite, galenite and chalcopyrite. The central portion consists of cryolite, containing pachnolite, ralstonite, quartz, sphalerite, pyrite, wolframite, arksutite (a variety of chiolite) thomsenolite, gearksutite and hagemannite. Crystallized cryolite occurs in cavities in the mass. In this inner vein, the cryolite is very pure, and increases in purity as the miners descend. At a depth of 100 feet from the surface, whole cargoes have been obtained sampling 99½ per cent pure cryolite. The impurities in the cryolite, which reduce its commercial value, are the siderite, chalcopyrite and galenite. The fluorides, such as pachnolite, are entirely unacted upon by the processes to which the cryolite is subjected.

The entire output of the Ivigtuk mines is sold to the Pennsylvania Salt Manufacturing Co., by the Danish government, while the lead and iron ores are sold to an English firm. The siderite perfectly adapted to use in the recarburizing part of the Bessemer process of making steel.

The name of cryolite comes from two Greek words, *kryos*, ice, and *lithos*, a stone, because when the Eskimos discovered it they said they found a new kind of ice that did not melt in the summer.

In their works at Natrona, Pa., near Pittsburg, the Pennsylvania Salt Co. make the cryolite into carbonate of soda and alum, both of a purity not easily obtained by other processes. The manufacture of metallic aluminum from cryolite has been tried and proved efficient, but is not carried on to any extent at the present time.

About the time that the contract for the supply of cryolite was concluded by the Pennsylvania Salt Co., a party who was in possession of some small fragments made a series of experiments, to test its usefulness in the manufacture of transparent glass. The experiments were unsuccessful, but resulted in the production of a beautiful specimen of opaque glass resembling French porcelain, and at a cost far below that of any existing process. The recipe consists of the mixing together of powdered cryolite and sand, in the proportion of 1 part cryolite to 2 of sand, with half an equivalent of zinc oxide. The zinc oxide need not be at all pure, and makes the glsss readily fusible, as lead oxide does in the flint glass.

The resulting ware is very hard and tough, so that a vessel of the size of a plate, stamped out of this material with the rapidity with which such articles are made, may be thrown down violently without fear of breaking. The advantages of this material over porcelain are easily seen. Porcelain must go through the tedious and expensive process of mixing and tempering selected clay, moulding on the wheel, drying, baking and annealing, and when finished breaks at sight.

On the other hand, a tea cup, as dainty and beautiful in appearance as china, yet strong as metal, may be made from cryolite as cheaply and rapidly as an ordinary glass

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tumbler—*Read by Francis H. Knauff before the Studets' Mineralogical Club, Philadelfihia July 7, 1893.*

Nature's Most Invincible Creatures.

We are apt to consider ourselves the most powerful and all-conquering members of the animal world, and next to us we range such creatures as the lion, tiger, grizzly bear and elephant, as capable of maintaining their own against all comers in an open hand-to-hand or mouth-to-mouth fight. Yet in doing so we err greatly, simply because we consider mere bigness or muscular force, forgetting the energy and the intellectual powers that make one of nature's tiny creatures, when combined in the vast numbers in which they are always found, by far the most formidable animal force known on land. Therefore, when the question is put to us, "Which do you consider the most resistless of all animals?" it is always safe to reply that if warlike manifestations are referred to, the soldier or driver ants are far and away the most terribly invincible creatures with which we can be brought in contact.

Monsieur Coillard, a French missionary in the Barotse Valley of South Central Africa, thus writes of these terrors there: "One sees them busy in innumerable battalions, ranked and disciplined, winding along like a broad black ribbon of watered silk. Whence come they? Where are they going? Nothing can stop them nor can any object change their route. If it is an inanimate object, they turn it aside and pass on; if it is living they assail it venomously, crowding one on top of the other to the attack, while the main army passes on, businesslike and silent. Is the obstacle a trench or a stream of water? Then they form themselves at its edge into a compact mass. Is this a deliberating assembly? Probably, for soon the mass stirs and moves on, crosses the trench or stream, continues in its incessant and mysterious march. A multitude of these soldiers are sacrificed for the common good, and these legions, which know not what it is to be beaten, pass over the corpses of these victims to their destination."

Against these tiny enemies no man, nor band of men, no lion or tiger, nor even a herd of elephants, can do anything but hurriedly get out of the way. Among the Barotse natives a favorite form of capital punishment is to coat the victim with grease and throw him before the advancing army of soldier ants. The quickness with which the poor wretch is dispatched is marvelous when it is considered that each ant can do nothing more than merely tear out a small particle of flesh and carry it off. Yet in a surprisingly short time the writhing victim will have been changed into a skeleton of clean and polished bones that will make the trained anatomist envious.

All are familiar with the tales of how these armies of ants enter a tropical village aud take entire possession of it, driving its inhabitants out in terror, and at last in a few hours or a day or two abandoning it cleaner than the arts of the most orderly housekeeper could ever make it. These are not travelers' tales. The most gifted pen must fail to give an adequate idea to the uninitiated of just how thorough and searching these creatures are in ridding a house of every bit of animal or vegetable matter in it. Perhaps, however, the narration of the following bit of personal experience may help to illustrate it. I had returned from a day's tramp in the hills, laden with trophies in the shape of tropical insects, some of them, perhaps, new to the eyes of scientists, and all of certain value when I was called out of my house by the cry, "The driver ants, the driver ants." Hastily placing most of my collections in glass jars and tin boxes, so as to be out of the reach of the invaders, and gathering such clothes as I would need for a day or two, I made a rather undignified retreat. After I had done so, I remembered that I had left some rare bees pinned in a box that was in the pocket of my collecting coat, but as the coat had been placed in a strong chest and this chest was heavily scented with naphthalin or "tar camphor," and the lid fitted down very tight, I felt that they were safe. The next morning when I went back, after a night spent in my hammock in a tamarind tree, I found that a bunch of bananas, consisting of a thick stem and about 100 of the fruit, there was no trace whatever, save the dangling strings with which it had been hung from the ceiling; and not a vestige of bread, chocolate, coffee and other eatable odds and ends could be found on the thoroughly cleaned shelves on which some food had been left. Even the cracks between the floor boards had been cleaned out, the particles of edible matter having been carried away or devoured and the mere dust left where it could easily be swept away.

This was not so bad, for a good cleaning never hurts a house in the tropics, but when I came to examine my chest and found that a hole quite two inches in diameter had been torn in one end through an inch board of hard wood, that the box in my coat pocket had also been pierced and every one of the pins on which my beetles had been arranged stood in place as empty and clean as when taken out of the paper, I had a better idea of the thoroughness of these tiny scavengers than ever before.—*Dr. Eugene Murray Aaron in Scientific American.*

The Bahama Expedition of the State University of Iowa.

During the summer of 1893 a most unusual move in educational circles was made by the State University of Iowa.

It is well known among scientists that nowhere in the world, possibly, do the waters of the sea throb with a more varied and wonderful marine flora and fauna than around the Bahamas and Florida keys. The "gardens of the sea" are there! With a water-glass (a common wooden bucket with a glass bottom) one looks down through brilliantly hued waters upon scenes of wonder and exquisite beauty.

There are great jagged caves of coral, with curious sponges growing about their walls; long, slender sponges of lilac and ocher, and some of scarlet and others of brown and black, and still others coarse and clumsy, looking like lumps of yellow mud or clay. There the slender gorgonias, ranging through all the shades of browns and tans, lift their delicate fingers teeming with polyp life. Yonder one sees a cavern carpeted with gorgeous "sea anemones," their tentacles glowing with bright green and scarlet and maroon and flesh color. These are Neptune's sea flowers! Here those treasures of the mermaids—the "sea fans"—gracefully wave their red and yellow lacework, and the "sea feathers" toss their nodding plumes. On this jutting coral crag a "sea urchin" bristles in long, slender black spines, and a little further on one

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of its relations glistens in a spiny armor as white as ivory. In and out among these caves flash the tropic fishes, on which the sea god has lavished the most vivid colors of his palette—intense blue and silvery white and gold, and turquoise; and some of these dwellers in his secret halls even gleam like mother-of-pearl, with all the colors of the rainbow.

But useless would it be to attempt to appropriately picture forth the wealth and beauty of these hidden wonders.

A few years ago the student got his knowledge of these marine forms from musty text-books bristling with names often as meaningless as unpronounceable. Later he had the advantage of dried and alcoholic specimens. But it was not until very recently that an effort was made to give him an opportunity to study these most beautiful and wonderful forms of life in their native homes.

Prof. C. C. Nutting, of the chair of systematic zoology at Iowa State University, had twice before crossed the rich zoological waters around the Bahamas, and it was then that occurred to him the plan which the summer of 1893 finally saw realized.

The Emily E. Johnson, a two-masted schooner, 96 feet long, tonnage 115 tons, was chartered of its owner, Captain C. C. Paul, of Baltimore, for three months for the use of the "Bahama Expedition of the State University of Iowa," which had for its object the "careful and systematic investigation of the marine fauna and flora around the Florida keys and Bahamas." The schooner was rapidly transformed into a dwelling vessel and floating laboratory.

A huge skylighted hatch was cut in the hold, and the hold itself fitted up to serve at once as sleeping apartments for the gentlemen of the party, as dining room, and as laboratory.

A double tier of extemporized bunks lined either wall, long oil-cloth-covered tables and camp-chairs occupied the center space, and a complete scientific library and laboratory supplies, including microscopes, chemicals, dissecting apparatus, etc., occupied shelves at one end. Provisions were stored in the forepart of the hold.

On deck was placed the hoisting apparatus, which was worked by hand and provided with 300 fathoms of wire rope. There was no steam aboard. The vessel had been chosen for its fitness to ride the shallow waters about the keys and islands.

Charles Flowers, of Baltimore, was engaged as captain and George Merrill was mate. Three sailors, a cook (all as black as the ace of spades), and a saffron-hued mulatto waiting boy comprised the crew.

The party itself was composed of twenty-one members (of which were ladies), and included professors, instructors, alumni, and students of Iowa State University, Professor Nutting being the leader. Gilbert L. Honser, instructor in biology, was the photograper, and many beautiful pictures were taken.

All were interested in science and each was supposed to be especially interested in some particular branch of science. All had applied voluntarily for membership in the party. The university furnished all appliances for dredging, for preserving materials, and for study. In addition, each member paid $200, which covered all expenses incurred by the party *collectively*, including car fare from Iowa City to Baltimore and return, with "stop-offs" at Washington and the World's Fair, in addition to our life aboard the vessel for three months. It is estimated that we traveled by land and sea some 6000 miles.

On May 5, 1893, we left Baltimore in our floating summer home and laboratory.

Seven days later we anchored in the harbor of Egg Island, Bahamas. Here we made a marvelous collection in the shallow waters and on land. Our deck was strewn with sea-fans and gorgonias. There were great tubs of rattling crabs and star fish and sea urchins, and buckets of mollusks. The ornithologist and entomologist had captured strange birds and "bugs," the first prize of the latter being that curious luminous beetle worn by the Cuban ladies as a glowing ornament for the hair or to catch the lace of their mantillas. The botanists had their cans full and running over with tropic vegetation, from the passion flower to our own familiar shepherd's purse and *sand burr;* and there were pans full of floating algae, "sea mosses." But it would take volumes to give an adequate idea of the spoils.

From here we sailed for Havanna, spent a few days exploring the city, and just outside the harbor dredged for that exceedingly rare animal form until lately supposed to be extinct, viz., the *crinoid*, genus *Pentacrinus.* We found fully 150 beautiful and perfect specimens.

Bahia Honda, thirty miles further along the western coast of Cuba, next claimed our attention. The Spanish authorities, however, took us for a filibustering expedition, and forbade us to go more than 30 feet from the water line. The mosquitoes also waged war against us, and we turned toward Key West.

Here, too, however, we were forbidden to land, as a vessel clearing from a Cuban port during the quarantine season must either lie fifteen days at sea or go to the Dry Tortugas and be fumigated.

Accordingly we chose the Dry Tortugas, and made many valuable collections, both by dredging and in shallow waters around the keys. Here we procured our first shark and investigated the coral reefs.

Returning to Key West, we dredged in the vicinity some three weeks. In deep sea dredging we used a common oyster dredge, a trawl, and a tangle bar. This last was especially useful in procuring the finer materials. It was merely a horizontal bar of iron, with great masses of raveled manila hemp rope tied to it, and in its meshes were caught a tangle of basket fish, crabs, sea urchins, deep sea algæ, and so on.

Clearing from Key West, we sailed for Harbor Island, Spanish Wells, and Eleuthera, Bahamas, and after a hasty run to Little San Salvador, or Cat Island, we had to turn northward, as we were due at Baltimore August 1.

The whole summer had been one delightful round of novelty and surprises. To one scientifically inclined it was an opportunity for careful study and investigation, such as has heretofore been enjoyed only by specialists in government employ. The knowledge gained in actually seeing and studying these curious life forms in their native element was of more practical value than the perusal of whole libraries of monographs, or years of study of museum specimens.

Then the trip offered, as well, glimpses of the customs and peoples of strange countries under the rule of three different powers. Cuba is Spanish, Key West and the keys are Uncle Sam's southernmost possessions, and the Bahamas are English. It was a study in comparative sociology. The trip has opened new avenues to educators; new possibilities to students, and to scientists, we feel

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safe in saying, it will offer many new life forms, dredged from the "unknown depths."

As the favoring breeze swelled our sails homeward bound and the foam curled, a silvery plume behind our prow, studded at night with glowing phosphorescence, our little group sat silent on the deck, awed, subdued by the splendor of the tropic sunset, the swift-following night, or the indescribable beauty of the moonlight on the sea.

As we sat dumb, in trying to comprehend the infinite expanse of ever-restless water around, the infinite expanse of burnished sky above, the infinite *silence* over all, and as memory wandered back over the revelations of the summer, one and all were humbled with the consciousness of the insignificance of man and the goodness of the Incomprehensible in granting us these glimpses of this wonderful glory!—*B. M. Wilson A. M. in Scientific American.*

State University of Iowa, April, '94.

Origin of the Columbine's Botanical Name.

There are but few persons who are not interested in knowing how plants come by their names, and there has been much speculation in relation to the botanical names *Aquilegia*, given to these plants. Most investigators have concluded, as Dr. Asa Gray expresses it, that "the name is derived from *aquila*, an eagle, from some fancied resemblance of the spurs to talons;" but that it is a very far-fetched fancy is apparent from a glance at the nectaries or spurs in our plate. There is, however, a little more scope for the fancy in the curved nectaries of some of the European species, though very little even there.

But even this does not account for the latter portion of the names, and so some have sought a better explanation in *Aquilegium*, which means a gathering or collection of rain-water, and suppose it was given to this plant because the nectaries are so formed that they might gather or collect rain. But that this conjecture is unsound we may gather from the pronunciation which even from the oldest period that we can trace has been *Aquile-gia*, while the water-gathering supposition would demand *Aquileg-ia*. It seems more than probable that the name is derived from the old story of Ganymedes. Most persons are familiar with the story of the beautiful boy, Jupiter's cup-bearer, who is represented on the back of an eagle flying through the air. Jupiter had a daughter, named *Aquilegia*, who was famed for great beauty, and among her most ardent admirers was the handsome servant of Jupiter, who paid her frequent visits on his celestial bird. It so happened, however, that the maiden was more smitten with the eagle than with its rider, and she gave her heart to the bird. When Ganymedes at length understood the situation, he endeavored to repair matters by hiding the eagle when he came to court the maiden. But this only made matters worse. She pined for that eagle, broke her heart at its continued absence, and died. As was usual in these catastrophes, according to the Grecian stories, Jupiter, grieving for the loss of his favorite daughter, turned her dead body into a flower, and gave it this name after her death,—which means literally that her life was given or bequeathed to the eagle. If this explanation of the origin of the name be correct, it may explain many of the poetical allusions we often meet with in connection with *Aquilegia.—Meehan's Monthly for April.*

How Camphor is Made.

One of the principal products of Formosa which has come under Japanese administration as a result of the war with China is camphor.

Small shanties are scattered over the hills where the camphor trees grow, and in all directions the clearing of the woods is going on at a rapid rate. On the hillsides are built distilleries, consisting of oblong-shaped structures principally of mud bricks, and about ten or twelve feet long, six feet broad and four feet high.

On each side there are five to ten fire holes about a foot apart and the same distance above the ground. On each fire hole is placed an earthen pot full of water, and above it a cylindrical tube, about a foot in diameter and two feet high, passes up through the structure and appears above it.

The tube is capped by a large inverted jar, with a packing of damp hemp between the jar and the cylinder to prevent the escape of steam. The cylinder is filled with chips of wood about the size of the little finger, which rests on a perforated lid covering the jar of water, so that when the steam rises it passes up to the inverted jar or condenser, absorbing certain resinous matter from the wood on its way.

While distillation is going on an essential oil is produced and is found mixed with the water on the inside of the jar. When the jar is removed, the beady drops solidify, crystalization commences and camphor in a crude form, looking like newly-formed snow, is detached by the hands, placed in baskets lined with plantain leaves and hurried off to the nearest border town for sale.

With regard to camphor, as in other commercial matters. the Chinese government has acted very foolishly. For over 30 years there has been a constant demand for camphor, and yet the administration has done nothing to prevent the reckless waste of the forests and taken no steps to provide for the reafforestation of uninhabited tracts useless for cultivation.—*Scottish Geographical Magazine.*

The Marvels of an Ostrich's Stomach.

The post mortem examination of one of the flock of ostriches owned by Barnum & Bailey, which has been on exhibition at the Central Park menagerie, New York City, gave the spectators a wonderful object lesson of the digestive capabilities of an ostrich. The ostrich was dissected by a taxidermist. He found the following articles in the bird's stomach: One wooden clothes pin; the bottoms of two beer bottles; a mouth harmonica, five inches long and two inches wide; a ferrule of an umbrella with a piece of the stick in it about four inches long; a metal skate key; a brass door key, five inches long; a woman's black horn comb; two pieces of coal; a woman's silk handkerchief; three stones about an inch thick, together with some cabbage, grass, lettuce, celery and considerable dirt. Strange to say, the ostrich did not die of indigestion, but from tuberculosis. The bird will be mounted in the museum and it would be interesting to preserve alongside the collection of objects which was found in its stomach.—*Scientific American.*

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Continued from last page.

"Eye Stones"	10	40	3 00
Lucky Tooth of Cod	10	30	2 00
Shark Teeth	10	50	3 00
Five specimen collections consisting of a selected specimen of each Tarantula, Trap-Door Spider, Scorpion, Horned Toad and Centipede, elegantly mounted in box	2 50	15 00	125 00
Horned Toad on Orange Wood Plaque	75	5 00	40 00
Yucca Palm Pincushion, 2½ in. in diam	15	75	5 00
" " " 3¼ " " "	25	1 25	9 00
" " " 4 " " "	35	1 75	15 00
Sand Dollars	10	30	2 00
Phillippian Urchins	25	1 25	10 00
White spined Urchin, select	50	1 50	12 50
King of the Echinoderms	2 00	10 00	75 00
Precious Coral, polished twigs, per oz	35	2 00	15 00
Alligator teeth	10	30	2 00
Rod of Royal Ponciana	35	60	5 00
Chinese Horn Nuts	10	30	2 00
" Brass Cash, Coins	05	30	2 00
Broken Bank Bills	10	60	5 00
Chameleon in Alcohol	25	1 00	8 00
Revolutionary Gun Flints	15	80	7 50
Arrowheads, assorted	05	30	2 00
" "	10	60	5 00
" "	15	1 50	12 00
Set of 6 var., 1c-50c unused 1880 Venzuela Stamps	15	75	5 00
Approval Sheet of 25 selected 1c stamps	10	75	5 00
" " " 2c " "	35	1 50	10 00
Young Naturalists' Marvelous collection, containing nearly 50 labeled specimens	75	5 00	35 00
Oregon Bird Arrow Points	25	1 50	10 00
" " " "	50	3 00	20 00

MEXICAN GOODS.

	Each.	Per 10.	Per 100.
Mexican Onyx Palettes with Indian Feather Work	1 00	7 50	60 00
Mexican Purses made from the fibre of the Spanish Bayonet	35	1 50	10 00
Mexican Watchman's Whistle, new and a great curio—Clay stained black	15	75	5 00
Mexican Pottery Fruit Banks novel and curious	50	2 00	15 00

NOVELTIES, &c.

	Each	Per 10	Per 100
Catapult or Snip Snap Gun frames, heavy iron	$ 15	$ 40	$ 3 00
Shell Jewel Baskets of small white scallops, bored and attached to bottom ready for lining add tying with ribbon	35	1 50	12 50
Souvenir Spoons, King Crab tail handles, pecten and cardium bowls, new and unique assorted	25	1 00	8 00
Agate Marbles	15	75	5 00
" Brooches	50	2 00	18 00
" Watch Charms	35	2 00	15 00
Brazilian Beetle Stick Pins	35	2 00	15 00
Herkimer Co. Rock Crystal Stick Pins, sterling silver mounting	75	3 00	25 00
Flag Stick Pins	10	60	5 00
Bone Penholders	15	75	6 00
Olive Wood Penholders	15	60	5 00
Aluminum Penholders	15	40	3 00
Combination Bone Penholder	25	1 25	10 00
King Crab Tail Pendolder, new, unique	15	75	6 00
Imported Austrian Brooches, flowers, &c	35	1 00	8 00
Shell Napkin Rings	35	1 50	12 50
" Purses	25	1 50	13 50
" Purses, large and fine	75	3 50	30 00
" Match-safes	35	2 00	17 50
" Vinagarettes	25	1 25	10 00
" Ships	50	2 00	17 50
Florida Palmetto Fans, fancy	35	1 75	15 00
White Metal Doll Carriages	50	1 75	15 00

Natural Science News.

ADVERTISING RATES.

Only 5c per nonpareil line, each insertion. 12 lines per inch.

Nothing inserted for less than 25 cents

SPECIAL RATES as given below will be made to parties using a large amount of space, either in a single issue or any number of issues throughout the year. The only condition being that the space contracted for must be taken up within the year; and can be used in large or small quantities, as their business requires.

100 lines 4½c per line.
200 " 4 "
300 " 3½ "
500 " 3 "
1000 " 2½ "
2000 " 2 "

A column contains 120 lines; a page, 360.

A little two-line ad. would use 104 lines during the year, entitling the purchaser to the 4½ cent rate, and cost only 9 cents per issue.

A small one inch ad. run one year would use 624 lines and would entitle the purchaser to the 3 cents per line rate, and cost only 2 cents per issue.

A 3½ inch ad run one year would use 2,028 lines and would entitle the purchaser to the 2 cent rate, and cost only 78 cents per issue.

It is the only publication in America in which dealers and collectors are sure of having their notices placed in the hands of the working Naturalists almost as soon as it does by addressing each by letter—while in an ordinary monthly publication there is natural delay of from 10 to 30 or more days.

In the NATURAL SCIENCE NEWS this delay will be obviated.

All copy must reach us at least *three* days prior to date of issue in order to insure insertion in a given number.

An Unsolicited Testimonial that Counts.

MEEKER & LUCAS
Successors to
MEEKER-TOWE STAMP CO.
Dealers in Foreign and U. S. Postage Stamps.

BRIDGEPORT, CONN., FEB. 17, '96.

MR. FRANK H. LATTIN:

We hereby agree to use 1000 lines in the NATURAL SCIENCE NEWS at 2½c per line; same to be used within one year from date.

MEEKER & LUCAS.

Enclosed please find contract for advertising in NATURAL SCIENCE NEWS; also copy for a 20 line ad. in next issue of the NATURAL SCIENCE NEWS.

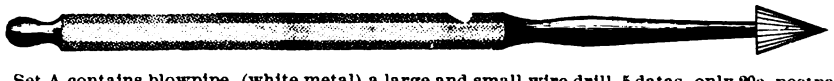
THE RETURNS FROM PREVIOUS ADS. IN YOUR PAPER BEING SO FINE WE DECIDED TO MAKE A CONTRACT WITH YOU. Yours faithfully,

MEEKER & LUCAS.

WANTED—AN IDEA Who can think of some simple thing to patent? Protect your ideas; they may bring you wealth. Write JOHN WEDDERBURN & CO., Patent Attorneys, Washington, D. C., for their $1,800 prize offer.

EGG TOOLS! EGG TOOLS!

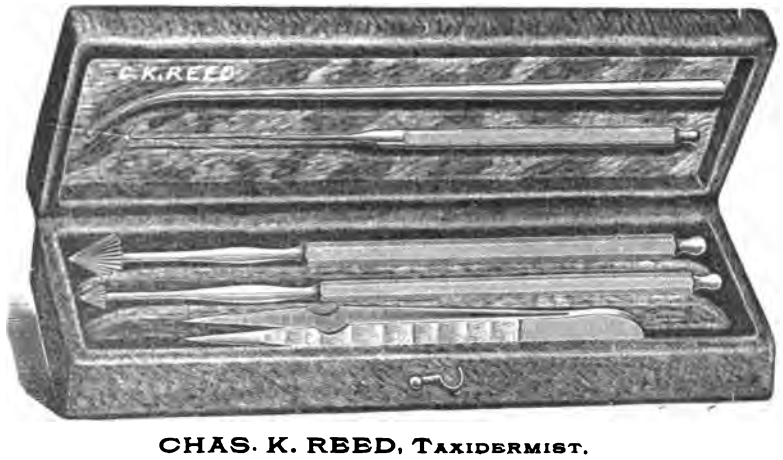
THE VERY BEST THAT CAN BE MADE.



Set A contains blowpipe, (white metal) a large and small wire drill, 5 datas, only 20c postpaid.

Set No. 1.—Nice blowpipe, drill (machine fine cut) embryo hook, engraved handle, all in pocket case, for 35c postpaid.

Set No. 2 (See cut.) Contains No's 1 and 4 drills, embryo hook, blowpipe, pointed forceps, nickel plated, in plush lined pocket case, 50 datas, 5 A. O. U. check lists, note book and pencil All of the best, $2.00 postpaid.



CHAS. K. REED, TAXIDERMIST.

And Dealer in all Naturalists' Supplies, Minerals, Shells, etc.,

262 Main St., WORCESTER, MASS.

Talk About Your Bargains!

Just look at these and don't wait until tomorrow before sending in your order:

50 fine varieties U. S. only 30 cents. This packet contains Postage Dues, Special Delivery, Depts. and many others.

1000 assorted U. S., 20 to 30 varieties, guaranteed, for only 10c. Postage 3c extra.

8 var. Columbians only	$ 15
100 var. foreign "	10
50 " " "	05
20 " " "	03
25 " " better grade	06

A mixed packet of stamps cataloguing from $4 to $6 for only $1 00

Postage extra on orders under 25c.

Above prices will only hold good while stock lasts.

MEEKER & LUCAS,
Box 296, Bridgeport, Conn.

Note our Prices on Printing.

5,000 Note Heads	$5.00; 10,000, $9.00
5,000 Good No. 6 Envelopes	5.00; 10,000, 9.00
5,000 Bill Heads	5.00; 10,000, 9.00
5,000 Statements	5.00; 10,000, 9.00
5,000 Business Cards	4.00; 10,000, 7.50

All work and stock guaranteed first class. It will pay you to send your printing to A. M. EDDY, Albion, N. Y.

MINERALS,

Ancient Indian Relics, Stamps and Curiosities.

Price List, Postage Free.

W Perry Arnold, Stonnington, Ct.

When answering advertisements always mention the NATURAL SCIENCE NEWS.

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SURPLUS.

For the past two years I have been endeavoring to unload an enormous stock of Specimens, Curios, &c. I have retailed, wholesaled and jobbed "carloads" of them but of a few items I had such an immense stock left on hand that no single dealer cared to shoulder the entire lay out, and since my large sale of stock and retail business to Mr. Short, a year ago, I've been unloading this "surplus" at Chautauqua, Lakeside, Fairs, Atlanta and through Premium Offers and Xmas Presents. I find, however, that I still have a "surplus" and that I'm apt to have one at the end of this season's campaign, but in order to avoid its being a large one I have concluded to offer the following during the months of April and May, after which I shall be busily engaged with my Resort Trade.

If you are "short" of CASH I can use *good* endorsed bankable paper or would even exchange for desirable sets of eggs, valuable U. S. and Department stamps or for anything in my "Want" ad. in NATURAL SCIENCE NEWS of February 29th or for anything in my line suitable to retail from my Chautauqua stores.

WHY DON'T YOU GET A "STARTER" TOWARDS A RETAIL, RESORT, FAIR OR EXCHANGE STOCK?

Small orders for single specimens will be filled at first column prices only, at which they are sent by mail or express prepaid. All prices given per 10 and per 100 are by express or freight at purchasers expense

Five can be selected at 10 prices; 50 at 100.

For $1.00 you can select anything on the list, at single rates, to the amount of $1.00 and I will send them to you prepaid and include a years subscription to either the OOLOGIST or NATURAL SCIENCE NEWS

$5.00. On an order amounting to $5.00 or over you can select *single* specimens of anything on the list at 10 rates.

$10.00. On an order of $10.00 you can select *single* specimens of any thing on the list at 100 rates.

By sending a $5 or $10 or you can get specimens at about ¼ usual prices, and at prices, on many things at least, which cannot be duplicated by purchasing in large quantities elsewhere.

If there is anything on the list that you can use I want to sell it to you even if that item amounts to only a few cents. If you find that you can use $25, $50 or $100 worth send me your list for inspection and I may be able to shade even these ridiculously low prices. The gist of the whole matter amounts to this: If I can convert this "surplus" into cash or stock which I can turn into cash during the next six months I'll not let any reasonable proposition pass by even if at a considerable loss to myself.

The stock I offer is A No. 1. Staple and saleable but I am overstocked. Let me hear from you. Address

FRANK H. LATTIN, Albion, N. Y.

MINERALS AND FOSSILS.

	Each	Per 10	Per 100
Scaphites nodosus, No. 1, small	10	50	3 00
" " " 2, medium	25	75	5 00
" " " 3, medium	50	1 25	10 00
" " " 4, largest	1 00	3 00	25 00
Geodes, selected, 3 in	50	2 00	15 00
" chalcedony, Black Hills	25	1 50	12 50
Fossil Polyp Coral, small	5	20	2 00
" " " medium	10	40	3 00
" " " large	25	75	5 00
Flexible Sandstone, per lb	50	1 50	10 00
Coquina, per lb	35	75	5 00
Electric Stone, per lb	50	2 00	12 50
Gypsum, per lb	30	50	3 00
Fossil Shark Teeth	5	20	1 00
" " " selects	10	30	2 50
Students Mineral Collections, 50 selected 1½ in. spec'ns	1 50	10 00	80 00
100 Specimen Mineral Collections, extra fine, specimens In this collection have a retail value of 5 and 10c each	3 50	25 00	200 00
GEM STONES, small cut and polished semi-precious stones, many suitable for mounting	15	1 00	7 50
Sard Trilby heart Intaglioes	25	1 50	10 00
Opals, Mexican	50	3 00	20 00
"	15	1 00	7 50
Red Onyx	15	1 00	7 50
Black Onyx	10	60	4 00
Crocidollie, Tiger-eye	15	1 00	7 50
" " medium	25	1 50	10 00
" " select	35	2 00	15 00
Lapis Lazuli	10	75	5 00
Chalcedony, tinted	10	75	5 00
" varigated	15	1 00	7 50
" showing an artificial tree	10	75	5 00
Black Ribbon Agates	10	75	5 00
Red Ribbon Agate	10	75	5 00
Carnelian	15	1 00	7 50
Assorted, all the above and many others	10	75	5 00
Ditto, selects	15	1 00	7 50

MEXICAN IRIDESCENT WARE.

The following is from an article on Mexico, by Charles Dudley Warner in *Harper's Magazine*: "At Patzcuaro we found by chance, for it was not displayed for sale, something that interested us more than anything else made in Mexico. This was a true iridescent ware. The specimens we obtained were small, round and rectangular plates. The lustre is the true Saracenic, Alhambra, or Gubbio lustre, the real iridescence, shimmering, shifting colors in changing light, ruby, green, blue. Would it not be strange if this lost art were preserved in Mexico? The ware is rude. The makers have not the certainty of producing a particular color in a picture which distinguishes a Gubbio work, and it lacks the elegance and glaze, the solidity and fineness of the Alhambra tiles. But it is a genuine iridescence. The plates are exceedingly thin and brittle. The lustre seems to be metallic, of copper, and the effect produced by subjecting the ware to an exceedingly high temperature, a firing so fierce that the clay is apparently disintegrated, and has lost its ringing quality." The ware is very difficult to procure and ours is one of the first lots sent to the U. S. The small pieces are mostly in plaques and round or oblong dishes, small vases, baskets, bowls, kettles, etc. Most of the flat pieces have holes in one edge to hang up as plaques, but can be used equally well for card receivers, cigar ash receivers, jewel cases, etc.

Small pieces of Iridescent Ware, assorted	15	1 00	7 50
Pulque Cups of Iridescent Ware	35	2 00	15 00
" " " " large	75	4 00	30 00
Sugar Bowls " " "	75	4 00	30 00

SHELLS.

	Each.	Per 10.	Per 100.
Peanut or Rope Shells	$ 03	$ 10	$ 50
Blued Cowry	15	75	5 00
Black Ear, small, rough	15	70	2 50
" " medium, rough	35	75	5 00
Scallops, *Pecten irradians*, dark valves	03	10	50
" " " light valves	05	25	2 00
Poached Egg Shells	25	75	5 00
Scallops—small white valves for fancy work	03	20	1 50
Snipe billed Murex	50	2 00	15 00
Strombus alatus, selects	15	60	4 00
" " ordinary	10	40	2 00
Goldmouths	15	75	5 00
Spider Shells	35	75	5 00
Cask Shells *Malea ringens*	75	3 50	25 00
Lettered Olive or Key Shells, small	03	20	1 00
" " " " medium	15	35	2 00
" " " " large	15	50	4 00
Japanese Eburnas	15	75	5 00
Lord's Prayer Cowries	35	2 00	17 50
Money Cowries	05	20	1 00
Mammoth Japanese Unio Valves	50	1 50	10 00
African Murex	75	3 00	20 00
Milk Strombus	35	1 00	7 50
Magpies, small	05	30	2 00
" medium	10	50	3 00
" large	25	75	5 00
Pearl Trochus	35	1 25	10 00
Paper Shells, *Sycotypus papyratia*	20	10	3 00
Marlin Spikes	25	1 00	8 00
Pink Murex	35	1 50	7 50
Rock Murex	25	75	5 00
Cardium, valves	15	70	2 00
African Murex, 2ds	25	50	3 00
Fox heads, small	25	75	5 00
" " 2ds	15	50	3 00
" large	35	1 25	10 00
White Murex, 2ds	15	60	4 00
Fulgur perversa, 10-12 in	75	1 50	10 00
Giant Fasciolarias 12-18 in	1 00	3 50	25 00
Kid Couchs	15	75	5 00
Camel Shells, *Ovulum gibbosum*	10	50	3 00
Angel wings, pairs, small	35	75	5 00
" " " large	75	3 50	25 00
Cardium isocardias	15	50	3 00
Orthalicus melanochilus	25	75	5 00
Liguus fasciata	15	50	3 00
Chama arcinella	20	75	5 00
Bleeding Teeth, selects, small	03	20	1 00
" " medium	05	30	2 00
" " large	10	60	5 00
Leaf-backed Murex, small	05	30	2 00
" " medium	10	50	3 00
" " large	15	75	5 00
Thorny-nosed " small	05	25	1 00
" " large	10	50	3 50
Bahama "	10	30	2 00
Silver lips	15	30	2 00
Dotted Cones	15	40	3 00
Dove Shells, from Brit sh Guiana exhibit at World's Fair	03	10	50
Wheel Shells, *Rotella*	03	20	1 00
Keyhole Limpets	10	30	2 00
Helix fideles, Oregon	25	75	5 00
Wampum or Tusk Shells	05	20	1 00
Little Agate Shells, *Achatinella*	10	30	2 00
Partula gibba, Ladrones	10	30	2 00
Pythea pyramidata	10	30	2 00
Quoit Shells, 1 valve, *Dosina*	10	30	2 00
Australian Jewel Shells, 1-valve, *Trigonia*	15	60	5 00

LAND AND MARINE CURIOS.

	Each.	Per 10.	Per 100.
Eggs of Hammerhead Shark, selects	15	1 00	7 50
" " " seconds	10	40	3 00
Hermit Crab in Shell	35	1 25	10 00
Black Starfish, *Echinaster sentus*	35	2 00	15 00
Liver Beans	10	30	2 50
Yellow Sea Beans	03	10	50
Red " "	03	10	50
Black " "	03	10	50
Brown-banded Sea Beans	05	20	1 00
Rose Coral	15	50	3 00
Honey Comb Coral	25	75	6 00
East Indian Branch Coral	03	10	50
" " " "	05	20	1 00
" " " "	10	40	3 00
" " " "	25	1 00	8 00
Egg Cases of Periwinkle	25	1 00	7 50
Tarpon Scales	05	20	1 00
Acorn Barnacles	10	50	4 00
Skate or Sand Shark Eggs	05	20	1 00
Small Porcupine Fish	35	1 50	12 50
W. I. Spike Coral	03	10	50
" " "	05	20	1 00
" " "	10	40	3 00
Organpipe "	05	20	1 00
" "	10	40	3 00
" "	25	1 00	8 00
" "	50	2 00	15 00
Resurrection Plants	15	75	6 00
Sea Fans, small	15	50	3 00
" medium	25	75	5 00
" large	35	1 00	7 50
Sea Ferns, small	25	75	5 00
" medium	50	1 25	10 00
" large	75	2 00	15 00
Florida Gorgonias, assorted	25	1 00	7 50
Tarantulas mounted in box	60	3 00	25 00
Scorpions " "	40	2 00	15 00
Trap-Door Spiders " "	50	2 50	20 00
" " nests	30	1 50	12 00
" " " in boxes	40	3 00	25 00
" " " Redwood pails	55	3 00	25 00

Continued on preceding page.

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NATURAL SCIENCE NEWS

VOL. II No. 11. ALBION, N. Y., APRIL 11, 1896. Whole No. 63.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants" "Exchanges," "For Sales," inserted in this department for 25c per 25 words Notices over 25 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

All **copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.**

A BARGAIN for some body. A 38 cal. 7 shot Winchester rifle, for only $5, cash. A good shooter. Address N. P. BRADT, Hindsburg Orleans Co., N. Y.

FOR SALE or EXCHANGE.—Philatelic Journals and Papers, for scientific books and magazines, minerals, herbarium specimens, etc. Send for list. CHAS G. NASH, 41 Grand St., Woonsocket, R. I. O

WILL SUPPLY a few birds in the meat such as Ducks, Gulls, &c. while season lasts. Skins if desired. A mounted Bald Eagle for sale, $15. WM. J. HEINZMAN, 1222 Monroe St., Sandusky, O. 63-2t

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ENTIRE set of Columbian stamps, unused, including all dollar denominations, best offer in cash or otherwise wins. Scott's price $28. D H. HAIGHT, Goshen, N. Y. 63-2t

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WILL EXCHANGE Jewelry, also cut Agate cubes, for fine minerals, fossils, woods, cut gems, or Indian relics. MISS A. F. RICE, Wollaston, Mass.

WILL EXCHANGE fine jewelry direct from manufactory, for dry or fancy goods, or other useful articles. Correspondence solicited. Miss A. F. RICE, Wollaston, Mass.

EXCHANGE NOTICE. *Swiss Cottages.* Exquisite. Beautiful, from Lucerne, Switzerland worth 35c to $10 each. Will exchange for Indian relics, Geodes or Quartz Crystals. W. R. SOUTHWELL, Middletown, N. Y.

FOR EXCHANGE.—I will exchange a secret for traping foxes by scent which will call them ¼ mile to the trap. The scent has to be made in April and it costs you nothing to make it, and until May 15 I will exchange the secret for $10 cash or $12 worth of such things as I can use in the line of Microscopes, Telescopes or Field Glasses, Mounted Birds, Rare Eggs, Books and U. S Stamps No cards answered. Address, WALTER E. McLAIN, Box 70, New Vineyard, Maine. 63-3tO

WANTED.—Pistol or revolver that shoots shot: one that will kill small birds at reasonable distance. Write, describing what you have, stating lowest exchange price in first class birds eggs. DANA C. GILLETT, Barre Center, N. Y.

BOYS WANTED to collect insects for me. Good pay. Write for particulars, inclosing stamp. PAUL L. SCHAEFER, 9059 Oak St., Sub-sta. 48., Chicago, Ills.

TO EXCHANGE.—A fine Turkish saber bayonet for good eggs in sets also Columbian stamps for eggs. CHARLES E. DOE, Box 1339, Providence, R I.

EXCHANGE.- Young white rats for birds eggs or for sale at 15 cents a pair. Have also a lot of duplicate birds eggs to exchange. ARCHIE H. CARUTHER, 60 Church St, Rutland, Vermont.

FOR SALE.—Choice sets of eggs valued at about $80. Will sell them for $35 cash. Have such sets as the rare Spotted Owl, Whistling Swan, Florida Dusky Duck, Golden crowned Kinglet, Winter Wren, Siberian Gull, etc. ARTHUR W. BROCKWAY, Hadlyme, Conn.

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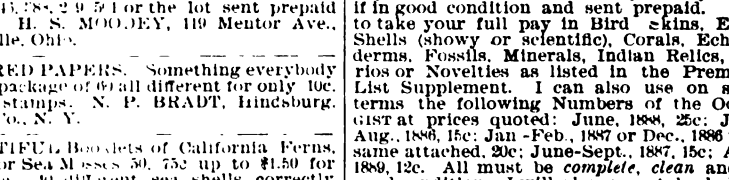

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Albion.....		7:00	9:10	11:35	3:25	6:50	11:06
Lockport.....		8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge..		8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls.		9:06	10:50	1:10	5:10	8:30	12:45
Buffalo.....		8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo.....		6:25		11:00	1:30	5:00	5:5(
Niagara Falls.		6:35	8:05	11:18	1:40		6:00
Susp. Bridge.		6:45	8:10	11:25	1:48		6:05
Lockport.....	6:00	7:25	8:30	12:00	2:25	5:55	6:45
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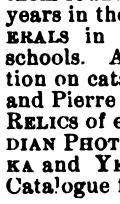

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"Scienec in Schools."

Dr. Morris Gibbs' article on "Science in Schools," in NAURAL SCIENCE NEWS, of April 13th, 1895, comes very near to my "hobby," and I wish all parents and teachers might read and act upon it, but it seems very important that the teachers should be competent as well in this as in other branches of study.

The science of natural history is one that can be so easily learned at an early age, and the truth of some statements are so easily proved or disapproved, that quite young students, who have a taste for the study, are often amused by things that are told them by the teacher.

A young boy, who spends most of his time in out-door study, copied in his note-book some of the strange things told him by the teacher, and remarked that "he chewed his lead pencil all to pieces to keep from laughing." In regard to insects, she said: "The larva was small eggs deposited by insects;" in describing the various families of birds she put the Killdeer Plover among the scratchers, and said of the woodpecker family "most of them had long *curved* bills.

Of course this could hardly be the fault of the teacher, as "Nature Study" is of comparatively recent date, and was not given in her examination; but how much can children learn of this subject unless better taught? Almost any bright, active boy has noted the long, straight bill of the woodpecker, and knows the feet of the killdeer never were made for scratching.

Now I have come at last to my special "hobby," and that is that parents should not only study the subject more, but also teach it to their children, or study it with them, at a very early age. Go out into the woods and fields with them, teach them to notice, first of all, and I care not if the first lesson be of flower, insect, bird or animal, one thing always leads to another in this line, and the more they learn the more they want to learn.

Oh, mothers! refuse some demands of society, neglect some new style in clothing that would require hours of labor, and go out with your children into the broad sunny fields, or cool shady woods and let no song of bird escape your ear, no delicately tinted leaf or gorgeously colored flower be lost to your eye's sight. If a strange, sweet perfume comes to your nostrils from flower or leaf, hunt it out. Leave no stone unturned that may be the hiding place for insects, or better still, may contain the fossil remains of some other insect or Mullusk, long since become extinct.

Of course you may not know all, or even much, about these things, but be sure your children will want to know "all about it" and will soon go far ahead of you, and that is what you want; and good old Kingsley's "Madame Why and Lady How" are the best teachers a child can have.

MRS. R. SIM,
Jefferson, Ohio.

A Geological Expedition to Patagonia.

Princeton College has planned another important geological expedition. Prof. J. B. Hatcher, Curator of the Museum of Vertebrate Palaeontology, accompanied by Mr. T. A. Patterson, formerly connected with the American Museum of Natural History in New York, has sailed for Patagonia. The explorations on the coast of Patagonia which were conducted by Prof. Darwin in his famous voyage in the Beagle, nearly half a century ago, first directed the attention of geologists to the great scientific importance of that inhospitable land. In later years the work he inaugurated has been prosecuted by the Argentine palaeontologists, Burmeister, Moreno and the brothers Arneghino.

The latter brought together a large collection of fossil mammals and birds and made important studies upon them, although they labored under great difficulties on account of the absence of material from the northern hemisphere for comparison. Two years ago St. Morens, the director of the Museum of La Plata, invited Mr. Lydekker from England to study the collections of that museum and to employ his extensive knowledge of the collections of Europe and Asia with the purpose of comparison with the fauna of South America. Mr. Lydekker has published two large volumes as the result of his studies, which though interesting and important, show that a vast amount of work remains to be done on the geology of Patagonia.

Princeton has now taken advantage of this opening and has sent out a well-equipped expedition. After studying the collection in Buenos Ayres, Mr. Hatcher will sail for Patagonia and then strike inland; the principal objects of the expedition are to make a thorough study of the Patagonian geology, which has not as yet been undertaken by a competent observer, and secondly to make as exhaustive a collection as possible of the fossils which are so abundant there, and which will be brought to Princeton for study and comparison with those of the North. Though the principal objects of the expedition are thus seen to be geological and palaeontological, the other natural sciences have not been neglected. Preparations have been made to form extensive collections in the mineralogy, zoology and botany of Patagonia and Terra del Fuego to enrich the Princeton Museum. A complete photographic apparatus has been taken along so as to get a large collection of views illustrating the geology of the country and the customs of the natives. Mr. Hatcher also holds two commissions from the United States government, one from the Department of Agriculture and one from the Bureau of Ethnology, and the officers of the government have done everything in their power to render the expedition successful.

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Mr. Hatcher goes with practically an unlimited leave of absence, and the results of his researches promise to be very interesting.—*Scientific American.*

Progress of Scientific Work.

A year or two ago attention was called to the prediction of an eminent authority that we were entering upon a period of scientific activity that would far transcend any previous experience. The most indifferent observer cannot fail to be amazed at the manner in which this prophesy is being fulfilled. Chemists are surprised to find that the long familiar atmosphere contains a large proportion of a substance hitherto unknown—the strange and inert argon; and helium, so long known in the spectrum of the sun, is discovered as a terrestrial element. With the liquefaction of air and hydrogen we are introduced to new chemistry of cold. The development of the electric furnace brings great possibilities in the reduction of certain metals, and among its remarkable products yields calcium carbide, the source of acetylene, which is the first hydro-carbon to be produced artifically on a large scale, and a revolutionary achievement in chemical synthesis. Most surprising of all is the new form of radiant energy. Eager students everywhere have quickly begun experimenting with the mysterious X rays, and in a few days we are given the new art of "shadowgraphy," which promises, among other marvels, that the sick can have their diseased organs brought to view, while the curious can have their skeletons photographed while they wait. The details of this new photography are being improved daily. Other epoch-making discoveries are almost grasped, and it is clear that, with so many roads opened to peaceful conquest, our end of the century days leave no time for demoralizing wars over political boundaries.—*Mining.*

Prairie Dogs and Their Neighbors.

For many years and I believe even yet to some extent, it has been held that prairie dogs, burrowing owls, and rattlesnakes, occupied burrows in common and in peace but I have never been able to reconcile myself to the idea.

Dogs and owls might agree, but the addition of a snake would be very apt to upset the domestic harmony.

Believing this I have always taken great interest in articles relating to the matter, but a chance acquaintance, whom I met in this city has given me a great deal of light on the subject, and as his observations suited my own theory I was very much pleased to learn what I could from him.

He had been for a number of years a rancher in South Dakota, and as there were several villages near his home he had every opportunity for observation.

In the spring as soon as the bright days commence the dogs come out of their burrows, and in fact are often seen before the spring fairly sets in, if a few warm days come.

Old and young dogs live in the same burrows in winter, but in the spring start out for themselves, the young females showing their inclination to matrimony, by their peculiar actions, probably with an eye to attracting the attention of the males.

They walk a short distance then erect themselves on their hind legs with fore paws in the air, at the same time uttering a peculiar squealing noise.

Soon a male will come up and after satisfying themselves as to the suitability of each other they start off to make their home, and after trying a number of places will finally get one to their likeing, and the work commences.

The hole is generally about five or six inches in diameter, though it becomes larger through use; and all the dirt that is taken out, is placed in a space about two feet in diameter around the burrow, being brought up in little balls in the fore paws of the animals.

These burrows are sometimes very deep: in one instance my informant cited, a neighbor of his was digging a cellar, and after completing it to a depth of thirteen feet had not come to the end of a burrow.

Rattlesnakes are almost always found around dog villages, but why should they not? A nice young prairie dog is probably as juicy and nice a morsel as they can wish, and they can always have it for the chasing.

In two instances my friend told me he had killed large rattlers and noticing they had a considerable bulge in them, cut them open, and found they contained young prairie dogs, one not yet dead, though it died soon after.

These dog villages are one of the greatest pests to the rancher, and every expedient is used to get rid of them. One of the most efficient is to drown them out, but it requires lots of water and more patience

It was in a deserted hole treated in this way that my friend noticed one of the burrowing owls, and on closer investigation, found that it had hollowed out a little place just inside the burrow to sit in, where it could look out.

He had never seen any of the owls in a burrow regularly occupied by dogs, and did not think they ever occupied burrows in common.

E. G. Haymond,
Seattle, Wash.

Curiosity of Plant Life.

It has been long been considered very curious, that the two lobes of the leaves of the *Dionæa*—the Venus flytrap—will close over and capture an insect that alights on the leaf, and more recent study shows that the plant really eats the insects it captures. But little is yet known of the nature of the mechanism by which it is enabled to do such marvelous work. Dr. J. M. Macfarlane has recently discovered that leaf blades will not respond to a single touch. No matter how severe a single stimulus may be, the blades will not close. There must be a second stimulus before an attempt at closing is made. But even here the stimuli must have an interlude. If the two stimuli follow closely, no response follows. Dr. Macfarlane finds that there must be a period of nearly a minute, fifty or sixty seconds, between the two. There is, however, some variation under different temperatures. The effect of the first touch or stimulus will be retained for some four minutes. The second excitation, if made after that, stands as an original motion, as a parliamentarian might say. Those who are fond of speculating on the "motives" of plants will see in this a wonderful provision of nature, most wonderful possibility than anything that has yet been brought out in connection with plant life. Knowing now, as we do, that the leaf closes on the insect for the purpose of eating it, there should be some way of discovering whether that which alights on the leaf's surface is eatable or not. It has no eyes to see with, so it cannot tell whether it is a

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piece of wood, stone or other inorganic material that is tempting it, as a living creature could. Such material falls, and remains still on the leaf. But an insect struggles, and by this struggle the plant receives intelligence that it is a living thing. Here also may be seen the advantage of a brief interlude between the stimuli; a piece of gravel might rebound—might make two stimuli close after one another. An insect would wait a short time to collect its senses, and formulate some plan of escape. It is very clear that this ability to discern between the animate and inanimate saves the plant from a great amount of useless labor. The discovery of Dr. Macfarlane is probably the most wonderful of all wonderful things that have been discovered in the behavior of plants. Mr. William Canby had already discovered that if a leaf had been "fooled" into closing over a piece or inorganic matter, it soon opened and let it out again. Mr. Macfarlane finds that when it catches an insect, it remains closed over it for twelve or fifteen hours—long enough to consume it. It takes eight or ten hours after an insect is caught before the acid—which in Drosera Mr. Darwin found analogous with pepsin, the leading destructive element in the gastric juice—flowed evenly over the whole surface of the leaf. The leaf surface is subject to stimuli equally with the hair —*The Independent.*

The Balitimore Oriole.

In her *Birdcraft* Mabel Osgood Wright relates the forgoing interesting bit of tradition counected with the naming of this bird:

"George Calvert, the first Baron Baltimore," writes she, "is the subject of a tradition which still lingers in Maryland, and has sufficient facts for a foundation to be credible. The story says that Calvert, worn out and discouraged by the various trials and the rigors of temperature in his Newfoundland colony, in 1628 visited the Virginia settlement. He explored the waters of the Chesapeake, with its noble tributaries and delicious climate, and found the shores and woods teeming with birds, and among them great flocks of orioles, who so cheered him with their song and color that he took them as good omens and adopted their colors for his own. Be this as it may, it is a likely story; for the ortole has gone on cheering mankind io this day."

BIRDS OF WESTERN NEW YORK.

ERNEST H. SHORT.

Introduction.

In placing this revised and enlarged list of our birds before the public I have no excuse to offer except that my object as stated in the introduction to my first edition i. e. "to bring the subject before other ornithologists—that we might some day bring it to completion," has been realized to a very satisfactory degree. While this list is still very incomplete, it embraces over twenty species omitted from the first one, I have seen fit to omit A. O. U. No. 4, *Columbus nigricollis californicus.* as further evidence of its occurrence was not forthcoming and I could not find the skin that I understood had been taken on Lake Ontario in 1892. I wish to tender my sincere thanks to Mr. Neil F. Posson of Medina, Orleans Co.; Mr. J. L. Davison, Lockport, Niagara Co.; Mr. Frank H. Lattin, Albion, Orleans Co.; Mr. Leslie V. Case, Naples, Ontario Co.; and others for notes and other help.

I am especially indebted to Messrs., Davison and Posson for complete lists of the birds of their respective localities.

Trusting that this may prove only another step toward a complete list, I am respectfully, THE AUTHOR.

April 1, 1896.

Order PYGOPODES. Diving Birds.

Family PODICIPIDÆ.—Grebes.

2. Holbœll's Grebe. *Colymbus holbœllii.* Rare migrant; one reported by J. L. Davison as taken at Wilson, N. Y., on Lake Ontario, May 4, 1887.

3. Horned Grebe. *Colymbus auritus.* Migrant; most common along Lake Ontario in the spring.

6. Pied-billed Grebe. *Podilymbus podiceps.* Summer resident. Breeds in suitable localities.

Family URINATORIDÆ.—Loons.

7. Loon. *Urinator imber.* Common migrant, especially on Lake Ontario.

11. Red-throated Loon. *Urinator arcticus.* Occasional migrant. One taken at mouth of Oak Orchard Creek, Orleans county, during February, 1893.

Order LONGIPENNES. Long-winged Swimmers.

Family LARIDÆ.—Gulls and Terns.

47. Great Black-backed Gull. *Larus marinus.* Rare migrant, reported by J. L. Davison also by G. F. Guelf of Brockport, Monroe Co., N. Y.

51a. American Herring Gull. *Larus argentatus smithsonianus.* Occasional straggler during spring migration.

54. Ring-billed Gull. *Larus delawarensis.* Occasional migrant.

60. Bonaparte's Gull. *Larus philadelphia.* Rare migrant. One shot near Albion, Orleans Co., in 1892.

70. Common Tern. *Sterna hirundo.* Occasional migrant. One shot at Chili, Monroe Co., 14 miles from Lake Ontario.

72. Roseate Tern. *Sterna dougallii.* Rare migrant. Reported by Mr. Davison as taken at Youngstown, on the Niagara River, May 31, 1886.

77. Black Tern. *Hydrochcelion nigra surinamensis.* Rare migrant. Confined to vicinity of Lake Ontario.

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109. WILSON'S PETREL. *Oceanites oceanicus.* Very rare straggler. J. L. Davison reports a specimen taken October, 1875, by a sportsman while shooting Plover near Lockport.

Order STEGANOPODES. Toti-palmate Swimmers.

Family PHÆTHONTIDÆ.--Tropic Birds.

112. YELLOW-BILLED TROPIC BIRD. *Phæthon flavirostris.* A bird of the Tropics and rare in the Gulf States. Rev. J. H. Langille reports that a young male of this species was brought to him alive at Knowlesville, Orleans Co., in September, 1878. It was found in a field after a heavy storm from the southwest.

Order ANSERES. Lamellirostral Swimmers.

Family ANATIDÆ.—Ducks, Geese and Swans.

129. AMERICAN MERGANSER. *Merganser americanus.* Migrant. Most frequently seen in spring.

130. RED-BREASTED MERGANSER. *Merganser serrator.* Migrant, not as common as last.

131. HOODED MERGANSER. *Lophodytes cucullatus.* Migrant. Most common on the lake in spring.

132. MALLARD. *Anas boschas.* Migrant. Occurring in small scattered flocks or most commonly in detached couples.

133. BLACK DUCK. *Anas obscura.* Common migrant on inland streams; coming in large flocks. Breeds in suitable places.

137. BALDPATE. *Anas americana.* Migrant. Occurring in small flocks.

139. GREEN-WINGED TEAL. *Anas carolinensis.* Migrant. Occurring in small flocks and detached couples, chiefly on secluded streams.

140. BLUE-WINGED TEAL. *Anas discors.* Migrant, habits like last.

142. SHOVELLER. *Spatula clypeata.* Occasional migrant. One shot at Chili, April 14, 1894.

143. PINTAIL. *Dafila acuta.* Migrant, common.

144. WOOD DUCK. *Aix sponsa.* Migrates in isolated couples; a few staying to breed in suitable localities.

146. REDHEAD. *Aythya americana.* Common migrant on the Lakes. Have often seen them in the Rochester markets, brought in from Lake Ontario. Rare inland.

147. CANVAS-BACK. *Aythya vallisneria.* Rare migrant.

148. AMERICAN SCAUP DUCK. *Aythya marila nearctica.* Migrant.

149. LESSER SCAUP DUCK. *Aythya affinis.* Migrant. May possibly breed as I have found them here in May.

150. RING-NECKED DUCK. *Aythya collaris.* Migrant. Common on Lake Ontario.

151. AMERICAN GOLDEN-EYE. *Glaucionetta clangula.* Rare migrant. One taken at Chil, in October, 1893.

153. BUFFLEHEAD. *Charitonetta albeola.* Migrant. Seen in couples.

154. OLD-SQUAW. *Clangulu hyemalis.* Migrant, chiefly confined to the lake.

167. RUDDY DUCK. *Erismatura rubida.* Rare migrant. One shot in April, 1891, at Chili, Monroe Co.

172. CANADA GOOSE. *Brania canadensis.* Common migrant.

[TO BE CONTINUED.]

A Fasting Spider.

I have in captivity, a spider that has not eaten anything for over a hundred days. It is just a common little house spider, and was placed in a glass globe on July 2d where he at once spun himself a web. The next day I dropped in a dead fly, but he refused to partake; thinking he preferred living victims, I put in two live flies, but he refused them also.

A few days later I put a few drops of water in the globe, a drop of which hung in the web to which he immediately ascended and sucked it nearly all up. The two flies died, and all are still laying in the globe untouched. I have put *nothing* in the globe since, but Mr. Spider is just as lively as ever.

I do not know much about spiders, and for all I know this fasting business may be nothing unusual, but I would like to know *what* the spider subsists on.

MORRIS RICE,
Kinloch, Mo.

Oct. 14th, 1895.

Wild Rice.

Few know more of the reed of our mud-flats than that it furnishes the food on which fattens for the epicure the reed-bird of autumn dinner tables—the bobolink of other seasons. But as wild rice—*Zizania aquatica* of science—it has played no mean part in the service of man. It was the staple food of the Indians that formerly inhabited Northern Wisconsin and Minnesota, where the plant abounds on the margin of lakes. Dr. Elliot Coues says that it is still the chief recourse of the Objibway Indians on the reservations of Minnesota. They not only gather it for their own use, but for the purpose of trade. A common name is Indian rice, and the lakes along which the plants abound are known as rice lakes. Whole Indian villages will be tenantless in autumn, the inhabitants having gone "ricing," as the harvesting is termed. The Indians push their canoes into masses of rice, bend the heads of rice over a crotched stick, and thrash the grain into the bottom of the boat.—*Independent.*

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$2 for $1.

During the balance of '96, or as long as present stock holds out, I will mail every person sending me $1.00 for a year's subscription to either the NATURAL SCIENCE NEWS or THE OÖLOGIST, their selection from goods mentioned in this list to the amount of $1.00. ($2.00 will secure *both* publications one year and $2.00 worth of goods.) Every subscriber to the NATURAL SCIENCE NEWS also receives two coupons, each good for a Want, Exchange or For Sale Notice, and every subscriber to the OÖLOGIST receives a card good for one notice. Send in your subscriptions at once—earliest ones are sure to get exactly what they want. Make a combination with a friend—you take the premium, he the publication or *vice versa*. Make remittances in most convenient manner. Address plainly and in full,

FRANK H. LATTIN, Publisher, Albion, Orleans Co., N. Y.

EGGS.

Your selection of any species, either in sets, singles or 2d class, listing at $1.00 or under at Lattin's "Standard Catalogue" prices. When selecting this premium you must *always* name extras to be used as substitutes to the full amount of your order. If the selection of eggs is left entirely with us we will send $1 25 worth instead of $1.00 worth—and you can if you wish suggest whether your prefer eggs of eastern, western, northern or southern species or whether you wish eggs of land, sea or fresh water species.

SCIENTIFIC SHELLS.

Your selection from species listing at $1.00 or under as offered in Lattin's Shell List in his June ('95) BULLETIN. When selecting this premium "extras" must always be named to fully equal the amount of the order. If the selection of scientific shells is left entirely with us we will send you shells that will list at Ward's prices to the amount of $1.50 instead of $1.00, and if you desire you may name the families from which you especially desire your selection to be made and we will comply with your desires as near as possible.

SHOWY SHELLS.

Any species catalogued at $1.00 or under in Lattin's old pink catalogue—always name a few extras when selecting this premium. If you are not familiar with the names of shells it is advisable and always more satisfactory to leave the selection with us.

CORALS.

Precious, *Corallium rubrum*, 1 oz. package of polished branches ..... $ 25
Rose Coral, *Manecina areolata* 10, 15, 25
Organpipe Coral, *Tubipora musica* 10, 25, 50. 1 00
Spike Coral, *Madrepora cerricornis* 10
Branch Coral, *Pocillopora bulbosa* 10, 25
Yellow Sea Fan, *Rhipidogorgia occatoria* 15, 25, 50
Purple Sea Fan, *Rhipidogorgia flabellum* 15, 25, 50
Creamy Sea Fan, *Rhipidogorgia elegans* 25, 50, 75
Purple Sea Feather, *Pterogorgia setosa* 25, 50, 1 00

We have dozens of other species of corals but not in sufficient quantity to list. We can however put you up choice collections of other species to the amount of $1.00, $2.00 or more.

ECHINODERMS.

Sand Dollar, *Echinarachnius parma* 10
Philippian Urchin, *Loganum bonani* 35
White Spinned Urchin, *Hipponoe esculenta* 35
"Aristotle's Lantern" the sea urchins dental apparatus 15
Giant Purple Urchin, *Strongylocentrotus franciscanus* 50
King of the Echinoderms, *Metalia pectoralis* 2 00
Black Starfish, *Echinaster sentus* 35

We have dozens of other species of Starfishes and Sea Urchins and would gladly select a $1 collection of either as a premium.

FOSSILS.

Shark Teeth ..... $ 5
Trilobite, *Calymene seraria* 25, 50, 75, 1 00
Scaphites nodosus 10, 25, 50, 1 00
Polyp Coral 10, 25

We have hundreds of fossils but not in sufficient quantity to list—can send collections of $1.00 or more in value if desired.

MINERALS.

Chiastolite Crystals ..... $ 15
Satin Spar 10, 25, 50
Quartz Crystals, Ark 10, 25, 50, 1 00
Coquina 10, 25
Native Lodestone 10, 25, 50
"Electric" Stone 10, 25, 50
Geodes, Quartz, both halves 50, 1 00
Chalcedony Geodes, Black Hills, *select* 35
Chalcedony Geodes, Black Hills, unopened 15
Opalized Wood 10, 25, 50
Meteorites, small perfect specimens 25
Ferruginous Quartz, doubly term. crystals 10
Herkimer Co. doubly-terminated Rock crystals 10, 25, 35, 50
Opal, Mexican, cut and polished 25, 50, 1 00
Tourmaline, brilliant black crystals 10, 25, 35
Gem Stones, small cut and polished semi-precious stones of almost every conceivable form, shape, size, color and style, ranging in size from ¼ to ¾ inch in diameter, Carnelian, Heliotrope or Bloodstone, Chalcedony, Clouded Agate, Banded Agate, Fortification Agate, Ribbon Agate, Brown Agate, Red Agate, Black Agate, Moss Agate, Agatized Wood, Mocha Stone, Dendritic Agate, Brecciated Agate, Onyx (in great variety), Sard, Sardonyx, Agate-Jasper, Lapis Lazuli, Crocidolite (Tiger eye), Fossil Corals, Wood Agate, Rock Crystal, Amethyst, Aventurine, Intaglioes, Opals, etc., etc. Fully one-half of them are suitable for jewel purposes, and if you wanted one mounted to replace a setting in a pin, cuff button, watch charm, ring top, or in other jewelry, your jeweler would charge you all the way from 25 cents to $1 for one of these identical stones (jewelers are buying these stones for this very purpose). When ordering state variety desired 10, 15, 20, 25
1 doz. assorted, my selection, culls 50
1 doz. assorted, my selection, choice 1 00

MISCELLANEOUS CURIOS.

Alligator Teeth 5, 10, 15, 25
Revolutionary Gun Flint 15
Tusk or Wampum Shell 5
Money Cowry Shell 5
Dove Shell from British Guinea, exhibit at World's Fair, 5 for 10
Chinese Horn Nut 5
Beetel Nut 10
Lucky Tooth of Cod 5
Mammoth Porcupine Quill 15
Scorpion in Box 35
Big Tree (Calif.) bark attached to wood 75
Package containing 1 Liver Bean, 12 assorted Sea Beans and 1 Cassia Beans 25
Set of World's Fair Tickets 1 00
Chinese Coin, cash 5
Broken Bank Bill 10
" " " 6 var 50
Chameleon in alcohol 20
Egg of Hammerhead or Leopard Shark 15
" Skate or Sand Shark 5
" Case of Periwinkle 15
Acorn Barnacle 10
" " double 20
Sea Horse, slightly imperfect 25
Hermit Crab in Shell 35
Sawfish Saw, 8 in 35
Curio (Vase) Sponge 35
Young Naturalist's Marvelous Collection, '95 edition, contains nearly 50 specimens 75
Mexican Watchman's Whistle, clay, unique 15
Resurrection Plants 15, 25
Tarpon Scales each 5c, per dozen 30
Small Burr or Porcupine Fish 35
Tarantula in box 60
Trap-door Spider 50
Horned Toad on Orange Wood Plaque 75
Trap-door Spider Nest in box 60
Trap-door Spider in Redwood Pail 55
Yucca Palm Cushions, 2½ in 15
" " " 3¼ in 25
" " " 4 in 35
Shark Teeth, select 10
"Eye Stones" 10
Oregon Bird Arrow Points ..... 25 to 75
Arrow and Spearheads of various material and from many localities, each ..... 5c to 1 00
Same, assorted per doz. ..... 50c to 3 00
Small Alligators, mounted 75

MEXICAN GOODS.

Iridescent Ware, small ..... $ 15
" " 6 all different 75
" Pulque Cups 35
" Sugar Bowls 75
Mexican Onyx Palettes with Indian Feather work:—Hummingbirds, etc 1 00
Purses knit from fibre of Spanish Bayonet 35
Watchman's Whistle of Clay, a great novelty 15
Pottery Fruit Banks, unique 50

FOREIGN STAMPS, ETC.

Packet, 100 var ..... $ 15
" 100 choice mixed, retail 1-5c 35
" 1000 mixed 50
Sheet of 25 selected 1c stamps 15
" " 25 " 2 " 30
" " 25 " 3 " 45
" " 25 " 4 " 60
" " 25 " 5 " 75
Set of 6 var., unused, 1 to 50c, Venezuela, 1880 15
Set, 4 var., used, Chili Telegraph 25
Set, 7 var., unused, Ecuador 15
Set, 4 var., used, Ecuador, '93 10
Set, 20 var., unused, French Colonies 40
Set, 6 var., used, Guatemala, 1886 35
1c unused Guatemala prov., 1886, surch 10
4r unused, Guatemala, 1878 10
½r unused, Guatemala, 1879 10
10c Vermillion, unused, New Brunswick, 1860 25
5c on 3c unused, British Honduras, prov., 1891 10
1c used, British Guiana, 1880 5
Popular Album, linen boards, 1200 spaces, 60 ill. pages 15
Philatelists Album, boards 35

BOOKS &c.

Apgar's "Key to Birds of N. E. U. S." ..... $ 50
Chapman's "Birds of Eastern North America." 3 00
Earl's "Pets of the Household" 50
Ingersoll's "Bird-Nesting" 1 25
Langille's "Our Birds in Their Haunts" 2 00
McIlwraith's "Birds of Ontario" 2 00
Stearn's "Bird Life in Labrador" 60
Bird Preserving and Bird Stuffing 35
Maynard's "Manual of Taxidermy" 1 25
Lattin's "Standard Catalog. of Eggs" (1896) 12
Stearn's "Notes on the Natural History of Labrador" 50
Eberhart's "Elements of Entomology," 40 plates—300 figures 50
Eberhart's "Outlines of Economic Entomology" 50
Eberhart's "Key to the Families of Insects" 25
The Pistol—A practical handbook on its Use and Care 50
Amateur Trapper and Trap-maker's Guide 75
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The YOUNG OOLOGIST, Vol. I and II nicely bound 85
THE OOLOGIST, Vol. III and IV nicely bound 75
THE OOLOGIST, Vol. IX, 1892, 208 pages bound 1 00
An Exchange Notice (or a card good for one) in OOLOGIST 25
Same in NATURAL SCIENCE NEWS 25
A year's subscription to THE OOLOGIST with exchange card 50
A year's subscription, with two exchange coupons, to NATURAL SCIENCE NEWS 1 00
Advertising space in OOLOGIST or N. SCI NEWS to the amount of $1.00. Should you desire to select this premium and not care to use the space at once a credit card will be issued for the amount which you can use when needed 1 00
PENIKESE, the 23 issues of NATURAL SCIENCE NEWS, containing this valuable serial complete, on Agassiz's famous summer school at Penikese Island, written by an eminent Professor who spent both seasons at the Island 50
THE OOLOGIST, a package of forty (40) back number, all different, *my selection* 75
Directions for collecting minerals 05

PEOPLE'S POPULAR HANDBOOKS.

We have sold thousands of this popular series of Handbooks. Each contains 64 double column, 6x8 in. pages filled with valuable information, etc., etc., complete descriptions of entire series for 1c stamp. Price *prepaid*, each 10cts.; 4 for 25cts.; 10 for 50cts.

No. 3 156 Popular Songs.
7 Mrs. Partington's Grab-bag.
10 Famous Comic Recitations.
11 " Dramatic Recitations.
12 Minstrel Show; Burnt Cork Comicalities."
14 Book of Out Door Games.
17 Practical Poultry Keeper.
18 Twelve Complete Novelettes.
19 Big Value Premium Budget.
21 Mystic Oracle or Fortune Teller and Dream Book.
22 Mesmerism and Clairvoyance.
23 Widder Doodle's Love Affair.
25 Book of Home Amusements.
27 Book of Dialogues.
28 How to Train Animals.
30 Modern Etiquette.
32 Every Boy His Own Toy Maker.
34 Art of Ventriloquism.
35 Ladies' Guide to Beauty.
36 Parlor Magic.
37 Phrenology Made Easy.
39 An Old Hunter's Tales of Adventure.
40 Spoopendyke Papers.
41 Famous Dialect Recitations.
42 Snap Shots from Many Humorous Writers.
43 Gurney's Lessons in Short Hand.

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NOVELTIES.

Double Pendant Satin Spar Stick Pin	$ 15
Quartz Crystal Stick Pins	35
Brazilian Beetle Stick Pins	35
Agate Brooch	50
Crocidolite Brooch	75
Agate Shoe Buttoner	75
Agate Glove Buttoner	50
Agate, Moss Agate, Tiger Eye, etc., Watch Charms	35
Agate Stamp Box	1 00
Pearl Penholders	35, 75
Pearl Letter Openers	50
Pearl Shell Spoon	35
Pocket Magnifier	35
Shell Napkin Ring	35
" Purse	25
" " fine	75
" Ship, thimble holder with thimble	40
Shell Match Safe	35
" Brooch	25
Souvenir Spoons, King Crab Tail handles	
Pecten and Cardium valve bowls	25, 35, 50
Carnelian Marbles, genuine	15
Bone Penholders	15
Bone Penholders, combination	25
Olive Wood Penholders	15
King Crab Tail Penholders, new and unique	15
Florida Fancy Palmetto Fans	35

New Subscribers.

New subscribers to my publications, THE OÖLOGIST and NATURAL SCIENCE NEWS are always in demand and during 1896 its publisher will give 50 cents worth of premiums for each new subscriber a present, *paid up*, '96 subscriber may send him This 50 cents worth of premiums must be selected from the list of premiums given on this page *and ten cents must be added to cover the mailing expenses of the present* Remember the new subscriber can accept the $1 premium offer and will secure all the perquisites connected with the same or he can pay 50 cts. for either publication alone and this 50 cents worth of presents is an additional offer on our part made to present, *paid up*, '96 subscribers who will assist in enlarging the subscription list of our publications.

Natural Science News.

ADVERTISING RATES.

Only 5c per norpareil line, each insertion. 12 lines per inch.

Nothing inserted for less than 25 cents.

SPECIAL RATES as given below will be made to parties using a large amount of space, either in a single issue or any number of issues throughout the year. The only condition being that the space contracted for must be taken up within the year; and can be used in large or small quantities, as their business requires.

100 lines 4½c per line.
200 " 4 "
300 " 3½ "
500 " 3 "
1000 " 2½ "
2000 " 2 "

A column contains 120 lines; a page, 360.

A little two-line ad. would use 104 lines during the year, entitling the purchaser to the 4½ cent rate, and cost only 9 cents per issue.

A small one inch ad. run one year would use 624 lines and would entitle the purchaser to the 3 cents per line rate, and cost only 3 cents per issue.

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It is the only publication in America in which dealers and collectors are surely having their notices placed in the hands of all working Naturalists almost as soon as if done by addressing each by letter—while in an ordinary monthly publication there is natural delay of from 10 to 30 or more days.

In the NATURAL SCIENCE NEWS this delay will be obviated.

All copy must reach us at least *three* days prior to date of issue in order to insure insertion in a given number.

MINERALS,

Ancient Indian Relics, Stamps and Curiosities.

Price List, Postage Free.

W Ferry Arnold, Stonnington, Ct.

Not a Fire or Removal Sale!

I need space and am going to sell at a sacrifice to reduce my stock and make room. All these goods are *first class* in every respect.

Send money in most convenient way. All items marked "mail" go PREPAID at prices quoted if your order amounts to 50 cents or over. Under 50 cents, 5 cents extra. Those marked "express" go at purchasers expense. Everything properly labelled and carefully packed.

Address plainly

ERNEST H. SHORT, Albion, N. Y.

INSTRUMENTS and SUPPLIES.

	Reg. price.	Spec price
Eye instrument for taxidermists, very handy in inserting glass eyes, by mail	$ 75	$ 54
12 in. scissor-handled stuffer, by mail	1 75	1 38
Quart jar arsenical soap, ready to apply, express	85	75
Large cake arsenical soap, dry, express	1 00	80
Box of bird lime, best imported, by mail	50	32
Artificial fern leaves, large, by mail per doz	65	38
Artificial leaves, medium sizes assorted, by mail per doz	15	9
Lichens, per package by mail	15	7
Grasses, per bunch, by mail	20	15
Cherry stands (Hawk size), express (by mail 6c extra)	45	32
Flat decorated stands for game and shorebirds, my mail	45	30
4 in. nickle plated caliper, marked in mm. and 20ths, without screw, by mail	1 00	78
6 in. steel rule marked in mm. and 130ths, by mail	1 00	74
Catapult gun with rubber, for killing small birds by mail	15	11
10 in. brass blowpipe, state whether you wish it for eggs or minerals, by mail	25	18
Same, 12 in	30	22
Hand blower complete, for oologists saves your wind, by mail	1 60	1 27
Box insect powder, for destroying dermestes, by mail	25	14
Folding butterfly net, the handiest ever made, by mail	1 60	1 42
Cyanide cans, for killing insects, express	35	24
Geologists hammer, express.		
Best steel, 1 lb, by mail 20c extra	1 00	76
" " 1½ " " " 28c "	1 25	85
" " 2 " " " 36c "	1 50	1 10
" " 2½ " " " 45c "	1 75	1 27
14 in. telescope with brass trimmings and leather case, by mail	2 75	1 75
Quart bottle of tanning liquor, by express	1 00	55
2 qt	2 00	1 00

SHOWY SHELLS.

All by mail postpaid.

Spondylus, thorny oyster	$2 50	$1 45
Giant white murex, 8½x6¼ in	1 25	72
" tiger cowry	45	27
" cockle	35	16
Crown shell, large	50	21
" " small	25	11
Cask shell, large	75	33
Black helmet	1 00	58
Milk strombus	35	11
Pearl snails, large	50	27
Green snails, fine	35	22
Gold-mouth	25	8
Magpie	20	14
Black-mouth strombus	15	6
Bicolored murex	15	6
Japanese eburna	25	8
Spiney venus, both valves	25	9
Quoit shells, both valves	15	6

MINERALS.

By mail postpaid.

Azurite and malachite, beautiful blue and green specimens, 1½x2 in	25	11
Copper with calcite	15	8
Catlinite, pipestone	15	6
Carborundum, 2x2 in	20	11
Calcite stalactites, fine greenish form from copper mines	15	8
Dufrenite 1x1½	15	9
Emory, 2x2 in	15	6
Graphite, 1½x2 in	20	9
Geyserite, 1½x2 in	25	9
Gold-bearing quartz, 1x1½ in	15	7
Lodestone, magnetic, 1x1½ in	15	6
Magnesite, Greece, 1½x2 in	20	9
Quartz crystals on rock, 1½x2	25	11
Rubellite, 2x2 in	35	18
Sulphur in native form, 2x2 in	20	10
Sphalerite, fine, 1x1½ in	15	7
Native tin ore, 1½x2 in	15	7
Mazon creek fossil fern in kidney shaped rock split open to show the fossil, 2 to 4 in. in length	50, 75	23, 31
Fossil leaves, like last, 1½ to 3 in	35, 75	17, 27

The "Little Gem" collection of semi-precious stones. It consists of the following, all polished and labelled, one of each: Sard, bloodstone, cats-eye, tiger eye, gold-stone, lapis-lazuli, sard-onyx, coral-agate, dendritic-agate, moss agate, niccoli, chalcedony, 2 var. each; carnelian and wood agates, 3 var. black onyx agate, and one shell charm; 20 in all, amounting at regular retail price to $1 50. I will send you the whole collection postpaid for 75

CURIOS.

Mexican iridescent pottery, cups, saucers, plates, etc., by mail	$ 15	$ 10
Same, ½ doz., for only		50
Mexican banks, shaped and colored in imitation of various fruits, by mail	50	31
Fragment of prehistoric pottery from Western New York, mail	25	11
Horse-foot crab, by mail	35	16
Ressurection plant, large, by mail	25	10
Piece of Tapa cloth made by natives of South Sea Isles, strong and curiously figured	15	6
Sea pen, giant, by mail	2 50	76
" small, by mail	1 00	38
Porcupine fish, by mail	50	24
Small sand dollar, by mail	5	3
Giant brain coral, 16 in. diam., 6 in. high, very fine, express or freight	5 00	2 25
Large organ-pipe coral, 10x9 in., very fine, express	2 50	1 20
Shark teeth, by mail	10	4
" " fossil, by mail	5	2
Sea tears, ½ doz., assorted colors, by mail	20	7

MISCELLANEOUS.

Horse shoe composed of minerals and semi-precious stones, labelled, very fine, by mail	$1 25	65
Anchor like above, by mail	1 25	65
Beaded Indian awl cases, by mail	45	31
Japanese book, very curious, mail	1 00	52
Chinese horn nut, by mail	10	3
Foreign stamps, by mail	2 50	50
Souvenir spoon, bowl of card um, handle tail of king crab, by mail	35	15
Penholder from tail of king crab, by mail	15	8

MAGAZINES, PAMPHLETS, ETC.

Nidiologist, Vol. 1, No's 3, 4, 5, 7, 10, 11, each	12
Vol. II, No's 2 and 7, each	10
Vol. III, No's 1, 3, 4-5, 6, 7, each	8
A. O. U. Check List, abridged edition, 1889	75 35
Government Reports, "The Prairie Ground Squirrels of the Mississippi Valley," Bailey, 1893, 67 pages	50
"N. A. Fauna No. 5," Merriam and Stejneger, 1891, 125 pages	60
"The Pocket Gophers of the U. S," Bailey, 46 pages, 1895	40
"The Common Crow of the U. S.," Barrows and Schwarz, 1895, 98pp	50
"Food and Tongues of Woodpeckers," by Beal and Lucas, 1895, 45 pages	40
"The Crow Blackbirds and Their Food," Beal, 1895, 18 pages	20
Smithsonian Reports, "Directions for Collecting Birds Eggs and Nests," Bendire, 1891, 10 pages	20
"Directions For Collecting Plants," Knowlton, 1891, 46 pages	30
"Directions For Collecting Reptiles and Batrachians," Stejneger, 1891, 14 pages	20
"Instructions for Collecting Mollusc's, etc.," Dall, 1892, 56 pages	35
The Auk, Vol 9 and 10 each	3 00 2 00
" " " 11 and 12, each	3 00 2 00
"Directions for Collecting Minerals," Tassin	10 7
"Birds of Western New York," Short 1893, 13 pages	10 7

These prices are good until May 20th only. If you order at once you will get just what you want.

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NATURAL SCIENCE NEWS

VOL. II. No. 12 ALBION, N. Y., APRIL 18, 1896. Whole No. 64.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 35 words. Notices over 35 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

***All* copy must reach us at least *three* days prior to date of issue in order to insure insertion in any given number.**

FOR SALE.—One Scotch collie pup 6 months old, one pup 2 months old, one 1 year old, registered in the H. K. C. & B.; 3 pairs of white fan pigeons. Will sell cheap or will exchange for anything useful. A. L. HYZER, Andes, N. Y.

PEACOCKS (live) $2.00 each; not in full plumage. Cork, grated fine for rock work, 15c per peck, any color, 2 lb per peck, postage 10c extra. J. J. WIRZ, Taxidermist, Augusta, Ga.

EXCHANGE. 16 gauge collecting gun with rifle barrel, cost $16—4x5 new model camera, cost $15—No. 5 autoharp, cost $20. What offers? C. H. DICKINSON, Grand Rapids, Minnesota.

TO EXCHANGE. Clean second hand book "Tom Brown at Rugby," for good offer of Indian relics or coins. F. S. BOGARDUS, Pelvidere Ill., Box 80.

SNOWY OWLS, to be sold: Live bird, quite white, sound, eats well, $5 net. Bird in meat nearly immaculate, in perfect condition, $5 net. Bird mounted, a pure white specimen, $7 net. P. B. PEABODY, St. Vincent, Minn. O

I HAVE Shakespeare's complete works in three cloth bound volumes to exchange for A 1 sets with data. Write, make me an offer. OLIVER DANIELS, Box 454, Kalamazoo, Mich. 61-2t

TO EXCHANGE. B b Cornet, watch, stamps and finely stuffed and mounted birds and mammals, heads on shields, collections in cases. Wanted: Bicycle, medical books, surgical and taxidermist instruments. All letters answered. Address, F. S. HAGGART, Taxidermist, Chagrin Falls, O. O

I WANT AT ONCE the following A. O. U. Nos.: 5, 34, 35, 47, 76, 108, 117, 130c, 122, 123b, 172, 187, 203, 216, 236, 258, 274, 281, 288, 293, 293a, 328, 335, 356, 366, 402, 408, 399, 418, 428, 434, 449, 474c, 478, 480, 482, 484, 486, 492, 537, 574, 575a, 588, 587a, 624, 630, 637, 645, 654, 662, 667, 671, 685, 696, 707a, 711, 716a, 734, 741a, 752, 768. All singles. Rare ones to be accompanied by data as to locality and collector. Sets taken where one constitutes the set. For any of these I will give good exchange in other eggs, showy shells, minerals, curios, etc. Address ERNEST H. SHORT, Albion, N. Y. O

EGG COLLECTORS, Attention. May 15th I will issue a Special Bargain Egg Bulletin, giving full list of sets on hand and prices at which I will send them. As I wish to close out all on hand, ready for new seasons collecting, I will sell at about ¼ regular catalogue rates. All sets first-class and guaranteed. List free. Send your name on postal. List will contain about $500.00 worth. GEO. W. DIXON, Watertown, South Dakota. O

FOR EXCHANGE. I will exchange a secret for traping foxes by scent which will call them ½ mile to the trap. The scent has to be made in April and it costs you nothing to make it, and until May 15 I will exchange the secret for $10 cash or $12 worth of such things as I can use in the line of Microscopes, Telescopes or Field Glasses, Mounted Birds, Rare Eggs, Books and U. S. Stamps. No cards answered. Address, WALTER E. McLAIN, Box 70, New Vineyard, Maine. 63-3tO

FOR SALE.—Two young foxes, just the right age to tame and handle. Can eat alone. Address JOHN HAGEN, Darien, N. Y.

WANTED.—All kinds of foreign and U. S. coins, medals and fractional currency. State condition, date, face value and your lowest cash prices. RUSSELL NEVILLE, Kewanee, Ills. 61-2t

THE ALL STEEL CLIMBER. Will not break. Will climb rough or smooth bark trees and lasts a life time. Weighs under two pounds. Price with straps $1.50; without 50c. Address R. C. ALEXANDER, Plymouth, Mich.

EXCHANGE.—A fine "Irish Setter" Dog 1 year old, good blood and healthy; also 4 Retrievers 5 months old for curios of any kind. Price, $50 for setter; $10 a piece for retrievers. All hand broke, not field. Eggs and skins from this locality at all times for sale or exchange. ALF. EASTGATE, Harrisburg, Nelson Co., N. D. 61-2t

A BARGAIN for some body. A 38 cal. 7 shot Winchester rifle, for only $5, cash. A good shooter. Address N. P. BRADT, Hindsburg, Orleans Co., N. Y.

WILL SUPPLY a few birds in the meat such as Ducks, Gulls, &c. while season lasts. Skins if desired. A mounted Bald Eagle for sale, $15. WM. J. HEINZMAN, 1212 Monroe St. Sandusky, O. 63-2t

ENTIRE set of Columbian stamps, unused, including all dollar denominations, best offer in cash or otherwise wins. Scott's price $28. D. H. HAIGHT, Goshen, N. Y. 63-2t

"AUKS" Wanted.—I will allow 50c each for any back number of the "*Auk*" you may have, if in good condition and sent prepaid. You to take your full pay in Bird Skins, Eggs, Shells (showy or scientific), Corals, Echinoderms, Fossils, Minerals, Indian Relics, Curios or Novelties as listed in the Premium List Supplement. I can also use on same terms the following Numbers of the OOLOGIST at prices quoted: June, 1888, 25c; July-Aug., 1886, 15c; Jan.-Feb., 1887 or Dec., 1886 with same attached, 20c; June-Sept., 1887, 15c; Apr., 1889, 12c. All must be *complete, clean* and in good condition. I will also accept back No's of the *Ornithologist and Oologist* or *Nidiologist* any issue and in any quantity at 5c per copy on same terms. I can also use books on subjects pertaining to Natural History if in good condition and cheap, also A No. 1 sets of eggs with data at ½ "Standard" rates. Lists of books and eggs must be submitted for my selection or approval before sending. Address at once FRANK H. LATTIN, Albion, N. Y.

Come to Florida.

A fortune can be made in a few years in pineapples and tomatoes; vegetables raised the whole year. An ideal home. For particulars write **R. P. Osler,** Avon Park, Fla 29&Otf

MINERALS,

Ancient Indian Relics, Stamps and Curiosities.

Price List, Postage Free.

W Perry Arnold, Stonnington, Ct.

WANTED—AN IDEA Who can think of some simple thing to patent? Protect your ideas; they may bring you wealth. Write JOHN WEDDERBURN & CO., Patent Attorneys, Washington, D. C., for their $1,800 prize offer.

COLORED PAPERS.—Something everybody needs, a package of 60 all different for only 10c, silver or stamps. N. P. BRADT, Hindsburg, Orleans Co., N. Y.

COLLECTORS Attention! Gulf Coast Eggs, Skins and Shells collected to order, cheap for *cash* only. H. E. PENDRY, Myers, Fla. ONtf

CHEAP! I will send A 1 mounted Green-winged Teals (male or female) for $1 each postpaid. I have mounted birds, skins and eggs constantly for sale "I don't use embalming process." WM. M. BRAY, Taxidermist, Box 1453, Grinnell, Iowa. 63-2t

DEAR SIR:—I am anxious to have you see a collection of the Famous Herkimer County Crystals, hence I make you this offer: If you are a subscriber to this paper, let me send you by return mail, post-paid, 36 of these Brilliant Gems: if they please you send me 72 cents, if not satisfactory return the collection and it will be O K. Yours respectfully, A. B. CRIM, Middleville, Herkimer Co., N. Y.

OPALS, Minerals, Cut Gems and Natural History Specimens. Will buy, sell or exchange. List for stamp. ROBERT BURNHAM, 15 Chestnut St., Providence, R. I. 51-25t

"NATURAL SCIENCE NEWS," Vol. I complete. Less than ten complete vols. left. Will send you one for only $1.00. Complete your files. Will furnish Nos. 1 and 2 at 10c each. All others 5c each or in lots of five or more 4c each, or ten or more 3c each. (Nos. 1 and 2 are always 10c per copy net.) FRANK H. LATTIN, Albion, N. Y.

FOR SALE OR EXCHANGE.—Malachite, Crysocolla, Chalcedony, Quartz, Azurite, Monazite and Frankline, Microscopic slides, Infusorial earth 100 localities, Trap-tufa and rocks for sale or exchange for other minerals or Microscope slides or Infusorial earths PROF. ARTHUR M. EDWARDS, Newark, N J. O. & N. t

WANTED.—Meteorites. New and undescribed ones especially desired. Good prices paid for complete "falls" or "finds." EDWIN E. HOWELL, 612, 17th St. N.W., Washington, D.C.

THOSE WANTING Chinese Ring-neck Pheasants (birds or eggs), deer, bear, or other Oregon birds or animals should address, MATTESON & [illegible], Pheasant Breeders, Turner, Oregon. 59-6t.

CABINETS. Send 10 cts for photo of our speciality -Self Locking. Perches—Oak samples by mail 8c, 10c and 15c; also stands, shields, glass cases, game panels, &c. Cabinets to order. HANAFORD CABINET CO., 139 and 141 W. Fulton St., Grand Rapids, Mich. 58MOtf

SCHOOL COLLECTIONS

50 Typical Rocks, 100 Important Minerals, 50 Representative Fossils,

all classified to illustrate Dana's Mineralogy and Geology; delivered freight paid, at low prices in sizes for school cabinets, teachers or students. Dana's latest work, Minerals and How to Study Them," for $1.30 postpaid. Catalogue and prices for stamp. 100,000 specimens. 11 years in this trade. L. W. STILWELL, Mineralogist, Deadwood, S. D.

When answering advertisements always mention the NATURALSCIENCE NEWS.

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SURPLUS.

For the past two years I have been endeavoring to unload an enormous stock of Specimens, Curios, &c. I have retailed, wholesaled and jobbed "carloads" of them but of a few items I had such an immense stock left on hand that no single dealer cared to shoulder the entire lay out, and since my large sale of stock and retail business to Mr. Short, a year ago, I've been unloading this "surplus" at Chautauqua, Lakeside, Fairs, Atlanta and through Premium Offers and Xmas Presents. I find, however, that I still have a "surplus" and that I'm apt to have one at the end of this season's campaign, but in order to avoid its being a large one I have concluded to offer the following during the months of April and May, after which I shall be busily engaged with my Resort Trade.

If you are "short" of CASH I can use *good* endorsed bankable paper or would even exchange for desirable sets of eggs, valuable U. S. and Department stamps or for anything in my "Want" ad. in NATURAL SCIENCE NEWS of February 29th or for anything in my line suitable to retail from my Chautauqua stores.

WHY DON'T YOU GET A "STARTER" TOWARDS A RETAIL, RESORT, FAIR OR EXCHANGE STOCK?

Small orders for single specimens will be filled at first column prices only, at which they are sent by mail or express prepaid. All prices given per 10 and per 100 are by express or freight at purchasers expense Five can be selected at 10 prices; 50 at 100.

For $1.00 you can select anything on the list, at single rates, to the amount of $1.00 and I will send them to you prepaid and include a years subscription to either the OOLOGIST or NATURAL SCIENCE NEWS

$5.00. On an order amounting to $5.00 or over you can select *single* specimens of anything on the list at 10 rates.

$10.00. On an order of $10.00 you can select *single* specimens of any thing on the list at 100 rates.

By sending a $5 or $10 or you can get specimens at about ¼ usual prices, and at prices, on many things at least which cannot be duplicated by purchasing in large quantities elsewhere.

If there is anything on the list that you can use I want to sell it to you even if that item amounts to only a few cents. If you find that you can use $25, $50 or $100 worth send me your list for inspection and I may be able to shade even these ridiculously low prices. The gist of the whole matter amounts to this: If I can convert this "surplus" into cash or stock which I can turn into cash during the next six months I'll not let any reasonable proposition pass by even if at a considerable loss to myself.

The stock I offer is A No. 1. Staple and saleable but I am overstocked. Let me hear from you. Address

FRANK H. LATTIN, Albion, N. Y.

MINERALS AND FOSSILS.

	Each	Per 10	Per 100
Scaphites nodosus. No. 1, small	10	50	3 00
" " " 2, medium	25	75	5 00
" " " 3, medium	50	1 25	10 00
" " " 4, largest	1 00	3 00	25 00
Geodes, selected, 3 in	50	2 00	15 00
" chalcedony, Black Hills	25	1 50	12 50
Fossil Polyp Coral, small	5	30	2 00
" " " medium	10	40	3 00
" " " large	25	75	5 00
Flexible Sandstone, per lb	50	1 50	10 00
Coquina, per lb	35	75	5 00
Electric Stone, per lb	50	2 00	12 50
Gypsum, per lb	30	50	3 00
Fossil Shark Teeth	5	20	1 00
" " " selects	10	30	2 50
Students Mineral Collections, 50 selected 1½ in. spec'ns	1 50	10 00	80 00
100 Specimen Mineral Collections, extra fine, specimens In this collection have a retail value of 5 and 10c each	3 00	25 00	200 00
GEM STONES, small cut and polished semi-precious stones, many suitable for mounting	15	1 00	7 50
Sard Trilby heart Intaglioes	25	1 50	10 00
Opals, Mexican	50	3 00	20 00
"	15	1 00	7 50
Red Onyx	15	1 00	7 50
Black Onyx	10	60	4 00
Crocidolite, Tiger-eye	15	1 00	7 50
" " medium	25	1 50	10 00
" " select	35	2 00	15 00
Lapis Lazuli	10	75	5 00
Chalcedony, tinted	10	75	5 00
" varigated	15	1 00	7 50
" showing an artificial tree	10	75	5 00
Black Ribbon Agates	10	75	5 00
Red Ribbon Agate	10	75	5 00
Carnelian	10	75	5 00
Assorted, all the above and many others	15	1 00	7 50
Ditto, selects			

MEXICAN IRIDESCENT WARE.

The following is from an article on Mexico, by Charles Dudley Warner in *Harper's Magazine*: "At Patzcuaro we found by chance, for it was not displayed for sale, something that interested us more than anything else made in Mexico. This was a true iridescent ware. The specimens we obtained were small, round and rectangular plates. The lustre is the true Saracenic, Alhambra, or Gubbio lustre, the real iridescence, shimmering, shifting colors in changing light, ruby, green, blue. Would it not be strange if this lost art were preserved in Mexico? The ware is rude. The makers have not the certainty of producing a particular color in a picture which distinguishes a Gubbio work, and it lacks the elegance and glaze, the solidity and fineness of the Alhambra tiles. But it is a genuine iridescence. The plates are exceedingly thin and brittle. The lustre seems to be metallic, of copper, and the effect produced by subjecting the ware to an exceedingly high temperature, a firing so fierce that the clay is apparently disintegrated, and has lost its ringing quality." The ware is very difficult to procure and ours is one of the first lots sent to the U. S. The small pieces are mostly in plaques and round or oblong dishes, small vases, baskets, bowls, kettles, etc. Most of the flat pieces have holes in one edge to hang up as plaques, but can be used equally well for card receivers, cigar ash receivers, jewel cases, etc.

Small pieces of Iridescent Ware, assorted	15	1 00	7 50
Pulque Cups of Iridescent Ware	35	2 00	15 00
" " " " large	75	4 00	30 00
Sugar Bowls " " "	75	4 00	30 00

SHELLS.

	Each.	Per 10.	Per 100.
Peanut or Rope Shells	$ 03	$ 10	$ 50
Blued Cowry	25	75	5 00
Black Ear, small, rough	15	20	2 00
" " medium, rough	35	75	5 00
Scallops, *Pecten irradians*, dark valves	03	10	50
" " " light valves	05	25	2 00
Poached Egg Shells	25	75	5 00
Scallops—small white valves for fancy work	03	20	1 50
Snipe billed Murex	50	2 00	15 00
Strombus alatus, selects	15	60	4 00
" " ordinary	10	40	2 00
Goldmouths	15	75	5 00
Spider Shells	35	75	5 00
Cask Shells *Malea ringens*	75	3 50	25 00
Lettered Olive or Key Shells, small	05	20	1 00
" " " " medium	15	35	2 00
" " " " large	15	50	3 00
Japanese Eburnas	15	75	5 00
Lord's Prayer Cowries	35	2 00	17 50
Money Cowries	05	20	1 00
Mammoth Japanese Unio Valves	50	1 50	10 00
African Murex	75	3 00	20 00
Milk Strombus	35	1 00	7 50
Magpies, small	05	30	2 00
" medium	10	50	3 00
" large	25	75	5 00
Pearl Trochus	25	1 25	10 00
Paper Shells, *Sycotypus papyratia*	20	50	3 00
Marlin Spikes	25	1 00	8 00
Pink Murex	35	1 50	7 50
Rock Murex	25	75	5 00
Cardium, valves	15	30	2 00
African Murex, 2ds	25	50	3 00
Fox heads, small	25	75	5 00
" " 2ds	15	50	3 00
" large	35	1 25	10 00
White Murex, 2ds	15	60	4 00
Fulgur perversa, 10-12 in	75	1 50	10 00
Giant Fasciolarias 12-18 in	1 00	3 50	25 00
Kid Conchs	15	75	5 00
Camel Shells, *Ovulum gibbosum*	10	50	3 00
Angel wings, pairs, small	25	75	5 00
" " " large	75	3 50	25 00
Cardium isocardias	15	50	3 00
Orthalicus melanochilus	25	75	5 00
Liguus fasciata	15	50	3 00
Chama arcinella	20	75	5 00
Bleeding Teeth, selects, small	03	20	1 00
" " medium	05	30	2 00
" " large	10	60	5 00
Leaf-backed Murex, small	05	20	2 00
" " medium	10	50	3 00
" " large	15	75	5 00
Thorny-nosed " small	05	25	1 00
" " large	10	50	3 50
Bahama "	10	30	2 00
Silver lips	15	30	2 00
Dotted Cones	15	40	3 00
Dove Shells, from British Guiana exhibit at World's Fair	03	10	50
Wheel Shells, *Rotella*	03	20	1 00
Keyhole Limpets	10	30	2 00
Helix Adeles, Oregon	25	75	5 00
Wampum or Tusk Shells	05	20	1 00
Little Agate Shells, *Achatinella*	10	30	2 00
Partula gibba, Ladrones	10	30	2 00
Pythea pyramidata	10	30	2 00
Quoit Shells, 1 valve, *Dosina*	10	30	2 00
Australian Jewel Shells, 1-valve, *Trigonia*	15	60	5 00

LAND AND MARINE CURIOS.

	Each.	Per 10.	Per 100.
Eggs of Hammerhead Shark, selects	15	1 00	7 50
" " " seconds	10	40	3 00
Hermit Crab in Shell	35	1 25	10 00
Black Starfish, *Echinaster sentus*	35	2 00	15 00
Liver Beans	10	30	2 00
Yellow Sea Beans	03	10	50
Red " "	03	10	50
Black " "	03	10	50
Brown-banded Sea Beans	05	20	1 00
Rose Coral	15	50	3 00
Honey Comb Coral	25	75	6 00
East Indian Branch Coral	03	10	50
" " " "	05	20	1 00
" " " "	10	40	3 00
" " " "	25	1 00	8 00
Egg Cases of Periwinkle	25	1 00	7 50
Tarpon Scales	05	20	1 00
Acorn Barnacles	10	50	4 00
Skate or Sand Shark Eggs	05	20	1 00
Small Porcupine Fish	35	1 50	12 50
W. I. Spike Coral	03	10	50
" " "	05	20	1 00
" " "	10	40	3 00
Organpipe "	05	20	1 00
" "	10	40	3 00
" "	25	1 00	8 00
" "	50	2 00	15 00
Resurrection Plants	15	75	6 00
Sea Fans, small	15	50	3 00
" medium	25	75	5 00
" large	35	1 00	7 50
Sea Ferns, small	25	75	5 00
" medium	50	1 25	10 00
" large	75	2 00	15 00
Florida Gorgonias, assorted	25	1 00	7 50
Tarantulas mounted in box	60	3 00	25 00
Scorpions " " "	40	2 00	17 00
Trap-Door Spiders " "	50	2 50	20 00
" " nests	30	1 50	12 00
" " " in boxes	60	3 00	25 00
" " " Redwood pails	56	3 00	25 00

Continued on next ad. page.

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Natural Science News.

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Natural Science News.

A Weekly Journal Devoted to Natural History.

FRANK H. LATTIN, Editor and Publisher, ALBION, N. Y.

Correspondence and items of interest to the student of any of the various branches of the Natural Sciences solicited from all.

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Entered at Albion P. O. as 2nd class mail matter

Post Prandial Pot-pourri.

DEAR MR. EDITOR:—Appreciating the fact that in most of the scientific articles of the present day, the great (I am) and little (me too) enter too largely into the substance, the writer of the following alliterating lines has shown that sense and science may be offered without a single pronoun, personal or otherwise.

As will be seen, the following article is largely scientific, and while it refers to Botany, Birds and Fishes, also relates to Pedagogy, Philosophy, and Pugilism, and is further embellished with a *Fin de siecle* love story.

Truly Yours, G. S.

Peter Pettigrew, person, Podunk, Pennsylvania, possessed Priscilla, Pandora, Phyllis, Patience, Polhymnia, Prudence.

Pleasing Patience peeled potatoes; pared pippins, prepared purre, pie-plant pies, parsnip poure, pungent pot-pourri; patched parasols; pressed pantaloons, parti-patterned petticoats. Patience possessed peculiar predilections.

Pleasant, pacific Prudence produced purple passamentarie, princely pourpoints, pourlaines. Prudence possessed poetic propensities; penned paracrastic poems; preferred pentametric parodies.

Pretty, pensive Phyllis preserved peaches, pomegranates, pumpkins, persimmons, pineapples; picked peppers; pitted prunelles; picked pecans, pawpaws. Phyllis positively proved preternaturally providential.

Paradorical, penetrating, philharmonic Polhymnia, phrenological prestidigitateur, palmistry, phrenology; possessed philomnisical propensities, pronouncedly paradisaic. Polhymnia performed pedagogical prodigies.

Popular, passive Priscilla planted petunias, pæonies, pelargoniums, pansies, polemoniums, potentillas, portulacas; proscribing phenogamous pyramidals; preferring procumbent, pdyandrus, polypetalous, pubescent perennials.

Preoccupied, prurient Pandora, proverbially prophetic, pursued psychology, palæology, palæontology, penology, phonetics, peizometry; prepared peculiar phosphoroscopic phenomena.

Pittsburg, Pennsylvania possesses philosophers, politicians, pharmacists, puritans, pugilists, peddlers.

Parson Pettigrew provided plentifully; possessed potential, parental propensities; palpable preciseness; pondered paternally periodically; perhaps premeditated presumptively. Pater-familas, possibly perceiving poverty, privately, precursorially proceeded; pathetically pleading: 'pre-eminently precious posterity, presupposing providential proposals, primordially promise positively. Provoking procrastination produces personal punishment, perchance proving peculiarly parnicious.'

Prosaic, peripatetic, prevaricating Philetus Peterson, principally peddled Peterkin's Panacea, pillules, pancreatin, prickly-pear potions, pennyroyal, podophyllin pellets; provided pleuritic plasters.

Petulent, piratical, pusillainmous, pugilistic Philander Palmer pummeled putative pugilistic promiscuously, practiced plestrical pastimes, pteriplegistic pursuits; played penny-ante; plunged profoundly; punished poorly prepared players; proffered plutonic pleasures; plundered puerile personages; pillaged philanthropic people.

Pertinacious Phillip Pyrrhus, Philadelphian previously, pharmacist, promulated pharmacodynamics; purified permanganate potash; prepared paraldehyd, perfumeries, paregoric, ptomain preventives, psychtics, peptogenic preparations, presumably pleasing pharmaceutists, physicians, pharmacologists, principally pharmacopolists.

Profound, pansophical, pedantic Paulus Pericles, panegyrist, prothonotary, philosophised prodigiously, preferring physicological prosyllogisms, psychopannichismic problems. Pericles pre-conceived precarious pseudongyms; pre-established patrongymics; plausibly precipitated pandemonium progmatically; provided pioneers prairies; pitifully plundered plaintiff's plethoric pant's-pockets.

Parsimonious, pachydermatous, puritaincal, phlegmatic Patrick Polybidas passed prolonged periods patiently pondering; prayed powerfully; penned prohibitionary pasquinades; puffed prohibitory passages; profaned paparchy profusely.

Plebian, pagan Petruchio Phisander, polemic philosophiser, professed pantheism; proscribing predestination, parthenogenesis; purporting pessamism; presupposing platonism (parenthetically); plagiarizing patrician piety purity.

Phineas Paddington, painter, painted portentious paradoxical phantasmical panoramas, principally presenting piscine pastimes. Phineas practiced piscatorial pleasures; pursued pisciculture; pleasing pastimes, poorly productive pecuninarily. Phineas possessed piscivorous peculiarities, preferring puffers pilchards, *pimelodus*, protesting pike-perch, pompanos, pickerel.

Phineas presented Parson Pettigrew's people partridges, pickerel, paintings. Polhymnia's papa possessing piscivorous preferences, perdivorous proclivities, presumably permitted Phineas's presumptive presentations. Phineas persisted, propitiated Polhymnia; playfully proposed. Polhymina promised.

Prosaic pill-peddling Philetus proposed, pinching peach-painting Patience. Peterson's peculiar propensities precluded possible peaceable procedures. Patience placidly, *proh pudor.*' Philetus pensively—'*præmonitus præmunitus.*' Patience prevented powerful prejudice; promised.

Pugilist Philander presupposing prior proposals preposterous, poring proudly, proclaimed preferment. Philander possessed potential philogynic propensities. Patience positively precluded possibilities.

Pharmacologist Pyrrhus pleased peaceful Prudence; penned poetic prescriptions; proffered perfumeries, pomades. Phillip proved per-

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sistent. Prudence precipitated proceedings, possibly perceiving proposals. Pyrrhus professed. Prudence purred, puttered, propounded problems, puzzles. Pyrrhus's powerful, passionate pleadings prevailed. Prudence, pensive, poutingly promised.

Parsimonious Polybidas prayed Phyllis's papa's permission. Parson Pettigrew permitted Polybidas's preferment. Polybidas preached post-prandially, prayed Phyllis's pardon; proposed primitively. Phyllis promised, professing profound passion.

Pagan Philsander preferred Priscilla, puting, pampered plebeian. Punctilious Priscilla proscribed Philsander, providentially proclaiming pessimists positively provoking profligates. Philsander purloined poison, partook; purgatory.

Pedantic Paricles panegyrized Pandora, proposing partnership; prognosticating prominent public position; promising parliament. Pericles prevailed. Pandora pronouncing, 'Parcæ permitting.

Pleasing peculiar Pennsylvanians, pleasantly portrayed.

GOSLOW SIMON,
Pernambuco, Patigonia.

The Alligator or "Gator."

(*Alligator mississipiensis.*)

The common alligator is pleantifully found in Florida, and Mississippi, the lakes and rivers of Louisiana and Carolina and similar localities. It is a fierce and dangerous reptile, in many of its habits bearing a close resemblance to the crocodile, and the other members of the family.

Unlike the crocodile, however, it avoids the salt water and is but seldom seen even near the mouths of rivers where the tide gives a brackish taste to the waters. It is mostly a fisheater, haunting those portions of the rivers where its prey most abounds, and catching them by diving under a passing shoal, snapping up one or two victims as it passes through them, tossing them in the air for the purpose of ejecting the water which has necessarily filled its mouth, catching them adroitly as they fall, and then swallowing them.

Though timid, as are most reptiles as long as their passions are not touched, the alligator has within it a very mine of furious rage, which, when aroused, knows no fear. Urged by a blind instinct that sees no obstacle, and hardly deserves so intelligent a name as anger it flings itself upon the assailants, and only ceases its attack as its last breath is drawn.

It is no easy matter to drive the breath out of an alligator, for its life seems to take a separate hold of every fibre in the creatures body, and though pierced through and through with bullets, crushed by heavy blows, and its body converted into a very pin-cushion, spears taking the place of pins, it writhes and twists, and struggles with wondering strength, snapping direfully with its huge jaws, and lashing its muscular tail from side to side with such vigor that it takes a bold man to venture within range of that terrible weapon.

It is fortunate that its head is not gifted with mobility equal to that of the tail. The alligator can only turn its head very slightly, on account of two bony projections, one on each side of the head, which are efficient obstacles to any but the smallest lateral motion. The antagonist may therefore easily escape if on land by springing aside before the reptile can turn. He must however, beware of its tail, for the alligator when angry sweeps right and left with that powerful member, and deals the most destructive blows with wonderful rapidity. Still the creature would rather avoid than seek a combat, and does not act in this manner untill driven to desperation.

Alligators are sometimes caught in a peculiar way. An ordinary line is of very little use as its sharp teeth can cut it in less time than it takes to write. Therefore an alligator line is made of several thickness of fishlines, each part separate.

When an alligator finds a hook down its throat it tries to bite the fishline which it cannot do as the different strands get caught in its teeth.

The eggs of the alligator are small and numerous. The parent deposits them in the sand of the river side, scratching a hole with her paws, and placing the eggs in a regular layer therein. She then scrapes sand, dry leaves, grass and mud over them, smooths it, and deposits a second layer upon them which are covered over in like manner until she has fifty or sixty eggs. Although they are hatched by the heat of the sun and the decaying vegetable matter, the mother does not desert her young, but leads them to the water and takes care of them until they are able to take care of themselves.

The young are terribly persecuted by birds and beasts, and are even in danger of being eaten by old males of its own species. During the winter months the alligator buries itself in the mud, but a very little warmth is sufficient to make it quit its retreat and come into open air again.

It sometimes attains a great size though its size is usually six or seven feet; specimens have been found measuring twice that length.

A live specimen at Central Park, New York, is twelve feet.

The alligator race threatens to soon become extinct, the same as its northern friend, the seal. At one time alligator skins were sold at from $25 to $100 but a recent item in a local paper says that $2.50 is the average price paid now. Notwithstanding this a firm in Florida has an annual business of $60,000 in that line. Fully 59,000 'gators are killed every year and unless the legislature puts a stop to it, they will be, in a few years, only seen in museums.

The term alligator is a corruption of the Spanish *el largarto* e i a lizard. Five species are known in various parts of the world, the Jacare or Yacare (*Jacare sclerops*) being one of them.

The reptile found in the tropical parts of America is not an alligator but a crocodile.. The first comparison with the alligator does not impress one with any considerable sense of difference, but the difference in breadth of the heads, when viewed from above, is very striking.

That of the crocodile is like its Nile brother, extremely narrow while that of the alligator is heavy, and very wide. The entire "build" of the crocodile is manifestly favorable to a maritime existence, while that of the alligator is for just such a life as it leads, one of sluggishness and inactivity.

S. A. PILLSBURY.

A Day Afield with Two Texan Conchologists.

I will give your readers a short description of a day's outing enjoyed by Mr. H. G. Askew and myself one day last April. We left the city of Austin at 5:30 a. m. and arrived at New Braunfels, Comal county at 7:30. After refreshments with well filled lunch baskets and many empty collecting boxes, we started up the beautiful Comal Creek on the east side working both the creek and valley near the creek, about half way from town to the head spring we crossed to the west side and worked the

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hillside and ridge until we arrived at the head spring of the Comal Creek. From here we struck across the country towards the Guadalupe River, crossing and working down said river to the railroad bridge, crossing which we worked back to town. This is one of the most beautiful and fertile valleys in this or any other state, bounded on the west by a high mountain ridge covered with evergreen trees; the springs burst from the foot of this ridge and flows along southward for about two miles when it turns to the east and flows by the town of New Braunfels, furnishing a bountiful supply of the purest water for the town; power to run a large flour mill, oil mill, electric light plant, to the Guadalupe River. From the top of this ridge, the scene is most beautiful and one well worth a long trip and tiresome climb, to enjoy; the bold running stream, clear as crystal, filled with aquatic plants and vegetation, among which numerous sun perch and bass are swimming, meanders through the valley to the Guadalupe River, whose wanderings can be traced in the distance by the timber. The thrifty little town of New Braunfels, near the middle of the valley, the farm houses scattered all over the valley, makes up a scene long to be remembered. Following are the shells we found.

Goniobasis comalensis, Pilsby.
" pleuristriata, Say.
Helix auriformis, Bld.
" dorfiuelliana, Lea.
" texasiana, Mor.
" monodon, Rack.
" Mooreanf, W. G. Birm.
" griseola, Pfr.
" roerneri, Pfr.
" hippocrepis, Pfr.
Holospira goldfussi, Mke.
Macroceramus gossei, Pfr.
Physa heteaostiopha, Say.
" halei, Lea.
Bulimulus schiedianuss, Pfr.
" dialbatus, Say.
Unio undalatus, Barnes.
" aurcus, Lea.
" auodentoides, Lea.
" laticostatus, Lea.
" tuberculatus, Barries.
" Mitchelli, Simpson.
Zonites minusculus, Birris.
Glaudina decussata, Desh.
Succinea avara, Say.
Planorbis leutus, Say.
Planorbis liebmani, D. Ke.
Segmentina arenijera, Say.
Unio bulandieri, Lea.
" *purpuratus*, Lam.
" *acevcianus*, Lea.

J. D. MITCHELL,
Victoria, Texas.

BIRDS OF WESTERN NEW YORK.

ERNEST H. SHORT.

172a. HUTCHIN'S GOOSE. *Branta canadensis hutchinsii.* Probably more common than generally supposed. Migrating in company with the Canada Goose. Mr. Newell Beckwith, of Gaines, Orleans Co., has a specimen taken there about 1888.

□180. WHISTLING SWAN. *Olor columbianus.* Rare Migrant. One taken near Medina, Orleans Co., in the spring of 1886.

Order HERODIONES. Herons, Ibisis, etc.

Family IBIDIDÆ.—Ibises.

186. GLOSSY IBIS. *Plegadis autumnalis.* A rare straggler. One taken in Tonawanda Swamp and brought to Mr. George H. Hedley of Medina.

Family ARDEIDÆ.—Herons.

190. AMERICRN BITTERN. *Botaurus letiginosus.* Summer resident. Breeding in suitable marshes.

191. LEAST BITTERN. *Ardetta exilis.* Summer resident. Breeds.

194. GREAT BLUE HERON. *Ardea herodias.* Summer resident. There are several breeding places where these birds colonize, especially in Tonawanda Swamp.

196. AMERICAN EGRET. *Ardea egretta.* Rare straggler. Two specimens reported from Olcott and one from Medina.

201. GREEN HERON. *Ardea virescens.* Summer resident. Breeds.

202. BLACK-CROWNED NIGHT HERON. *Nyctocorax nyctocorax nævius.* Rare straggler.

Order PALUDICOLÆ. Cranes, Rails, etc.

Family RALLIDÆ.—Rails, Gallinules, etc.

212. VIRGINIA RAIL. *Rallus virginianus.* Summer resident. Breeds.

214. SORA. *Porzana carolina.* Summer resident. Breeds.

215. YELLOW RAIL. *Porzana noveboracensis.* Very rare. One reported by G. F. Guelf and A. H. Davis as taken near Brockport. Also taken near Murray, Orleans Co., by C. Cliff.

219. FLORIDA GALLINULE. *Gallinula galeata.* Summer resident. Breeds.

221. AMERICAN COOT. *Fulica americana.* Common migrant. Probably breeds.

Order LIMICOLÆ. Shore Birds.

Family SCOLOPACIDÆ.—Snipes, Sandpipers, etc.

228. AMERICAN WOODCOCK. *Philohela minor.* Common summer resident and breeder.

230. WILSON'S SNIPE. *Gallinago delicata.* Migrant. Common in some localities.

239. PECTORAL SANDPIPER. *Tringa maculata.* A rare migrant; reported by Mr. Davison.

242. LEAST SANDPIPER. *Tringa minutilla.* Migrant. Most common in the fall.

246. SEMIPALMATED SANDPIPER. *Ereunetes pusillus.* Occasional migrant.

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248. SANDERLING. *Calidris arenaria.* Occasional migrant on the lake shore.

254. GREATER YELLOW-LEGS. *Totanus melanoleucus.* Common migrant. Solitary in its habits during migration.

255. YELLOW-LEGS. *Totanus flavipes.* Migrant not as common as last.

256. SOLITARY SANDPIPER. *Totanus solitarius.* Rare migrant. One shot at Chili, Monroe Co., in May, 1889.

261. BARTRAMIAN SANDPIPER. *Bartramia longicauda.* Migrant and *rare* breeder. Found an old bird and four newly hatched young in the latter part of June, 1890.

262. BUFF-BREASTED SANDPIPER- *Tryngites subruficollis.* A very rare migrant. Davison reports one found among Golden Plover at Lockport.

263. SPOTTED SANDPIPER. *Actitis macularia.* Common summer resident and breeder.

265. HUDSONIAN CURLEW. *Numenius hudsonicus.* A rare migrant. Usually with Plover.

266. ESKIMO CURLEW. *Numenius borealis.* Like the last, a rare migraut with Plover in the fall. Mr. Davison reports a specimen secured by F. H. Hill of Lockport while shooting Plover.

Family CHARADRIIDÆ.—Plovers.

270. BLACK-BELLIED PLOVER. *Charadrius squatarola.* Migrant. Not as common as next.

272. AMERICAN GOLDEN PLOVER. *Charadrius dominicus.* Common migrant.

273. KILLDEER. *Ægialitis vocifera.* Common summer resident and breeder.

274. SEMIPALMATED PLOVER. *Ægialitis semipalmata.* Occasional migrant.

Family AMPHRIZIDÆ.—Surf Birds and Turnstones.

283. TURNSTONE. *Arenaria intrepres.* Migrant on the lake shore.

Order GALLINÆ. Gallinaceous Birds.

Family TETRAONIDÆ.—Grouses, Partridges and Quails.

289. BOBWHITE. *Colinus virginianus.* Resident. Breeds. Not as common as formerly.

300. RUFFED GROUSE. *Bonasa umbellus.* Common resident in heavy timber, becoming scarce as you approach the cities and large towns. Breeds.

Order COLUMAÆ. Pigeons.

Family COLUMBIDÆ.—Pigeons.

315. PASSENGER PIGEON. *Ectopistes migratorius.* Migrant and very rare summer resident. Breeding in some localities.

316. MOURNING DOVE. *Zenaidura macroura.* Common summer resident. Breeds.

[TO BE CONTINUED.]

Nature's Museum.

There are a great many people who dislike to go out into the country, for, they say, there is nothing new to be seen there; to them it is always the same uninteresting picture; they would prefer to take a walk along the busy streets of a large city, where they can look into the shop windows, and constantly find something new to interest and amuse them. But you will find that the people who make these, and similiar remarks, have no acquaintance whatever with Nature. A flashy and showy woman at first seems exceedingly pretty and attractive, but upon acquaintance it is discovered that her charms are not what they at first seemed to be. It is the retiring, modest woman who improves upon acquaintance, and the more we learn of her character the more beautiful she appears to us. It is the same with Nature. At first she seems plain and uninteresting, but the better we know her, the more we appreciate her charms.

It is not necessary that a person should have a large collection of Natural History objects to know Nature, and enjoy the country; nor is it necessary to take up the study of any particular branch of Natural History to enjoy country life. Tne main thing is to have the eyes and ears open, and interesting objects will soon show themselves that never before were seen.

I once went out into the country to gather mushrooms with a man who made mushrooms his hobby. Although I had my eyes wide open for them, he would pick them up from under my feet, and from off the tree against which I was leaning, while I had difficulty in finding any, Since that I have kept my eyes open for mushrooms, as well as other objects, and have found many beautiful and interesting forms I never before dreamed existed.

The country is the greatest Natural History museum we can find.

If you wish to know Nature, take frequent walks to the country, with a large opera glass in one hand and a magnifying glass in the other; with your eyes open for new sights, and your ears alert for every sound. You will then enjoy your walks and improve your mind as well as your health.

W. S. JOHNSON,
Boonville, N. Y.

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" " " 3¼ " " "	25	1 25	9 00
" " " 4 " " "	35	1 75	15 00
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Broken Bank Bills	10	60	5 00
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" "	10	60	5 00
" "	25	1 50	12 00
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" " " "	50	3 00	20 00

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Mexican Pottery Fruit Banks novel and curious	50	2 00	15 00

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Olive Wood Penholders	15	60	5 00
Aluminum Penholders	15	40	3 00
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Stations.	A.M.	A.M.	A.M.	P.M.	P.M.	P.M.
Rochester		8:00	10:30	2:20	5:35	10:00
Albion	7 00	9:10	11:35	3:25	6:50	11:06
Lockport	8:05	10:05	12:22	4:20	7:40	12:00
Susp. Bridge	8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls	9:06	10:50	1:10	5:10	8:30	12:45
Buffalo	8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo	6:25		11:00	1.30	5.00	5.5
Niagara Falls	6 35	8.05	11:18	1:40		6 0
Susp. Bridge	6:45	8:10	11:25	1:48		6:0
Lockport	6:00 7:25	8:50	12.00	2:25	5:55	6:4
Albion	6:50 8:15		1:00	3:25	6:45	7:5
Rochester	8:00 9.20		2:05	4:35		9:00

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*Ruffed Grouse	15	04
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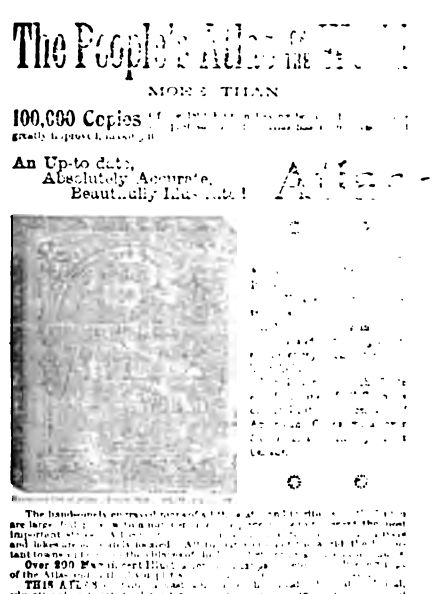

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pp. 49-52, are at the end of vol. I

NATURAL SCIENCE NEWS

VOL. II. No. 13. ALBION, N. Y., APRIL 25, 1896. Whole No. 65.

Wants, Exchanges, and For Sales.

Brief special announcements, "Wants," "Exchanges," "For Sales," inserted in this department for 25c per 35 words. Notices over 35 words charged at the rate of one-half cent per each additional word. No notice inserted for less than 25c. Terms, cash with order.

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Rochester			8:00	10:30	2:20	5:35	10:00
Albion		7 00	9:10	11:35	3:25	6:50	11:06
Lockport		8:05	10:05	12.22	4:20	7:40	12:00
Susp. Bridge		8:45	10:45	1:00	5:05	8:20	12:35
Niagara Falls		9:06	10:50	1:10	5:10	8:30	12:45
Buffalo		8:55	10:55	1:25	5:15	8:45	

EASTWARD.

Buffalo	6:25		11:00	1:30	5:00	5 5(
Niagara Falls	6:35	8:05	11:18	1:40		6:00
Susp. Bridge	6:45	8:10	11:25	1:48		6:05
Lockport	6:00 7:25	8:50	12:00	2:25	5:55	6:45
Albion	6:50 8:15		1:00	3:25	6:45	7:50
Rochester	8:00 9:30		2:05	4:35		9:00

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A Sketch of the Life History of Papilio Asterias. *

One of the most beautiful and interesting of Natural Science studies is Entomology, and one of the most interesting special studies in this is the order of Lepidoptera.

Again one of the most pleasant pastimes in this study as well as a valuable means of personal investigation and observation is the breeding of the perfect insect from the egg or larvæ.

During the past summer I found time in my other duties to confine a few of the yellow and black "worms" found on the caraway plant, and brought under closer observation the well known process of transformation and also the less known fact of the parasitical operation of *Trogus epssorius*. Brulle on this species.

P. asterias. Drurg., appears in New England and the middle states in June where it lays its eggs on the leaves of the caraway, parsley and plants of like order. From the brood thus hatched another set of butterflies appear in August. Thus says Packard's "Guide," but my observations are that from the time of their appearance in early summer until late in the season (just what date I have no record to state from), when they disappear for the winter; they are more or less constant with us and may be seen in varying numbers at any time.

They are distinctively what might be termed a domestic insect and the caterpillar or larva must be familiar to every observer in country home. These range from one and one quarter to two inches or more in length, most commonly found on the caraway and like plants on the leaves of which they feed. They are yellow striped and spotted with black and when irritated push out from a slit in the prothaic ring, a V-shaped fleshy yellow scent organ which they employ as a means of defense, and which is quite equal in proportion to its size to the firearm of the skunk.

Unfortunately I have been unable to record the time which elapses between the hatching of the larva and the passing of the same from the larva to the pupa stage, nor have I seen any record of same by any authority. In the pupa stage however the time passed is from nine to fifteen days and from this the perfect insect emerging with folded wings, in the course of an hour or two of painful crawling and slow closing and expanding of the wings, has fully developed the latter organ.

The male averages a trifle smaller than the female, having the blue mottling on the wings either almost invisible or entirely wanting and a band of large conspicuous spots of bright yellow traversing both pairs of wings about midway from body to outer margin.

When the larva first passes into the pupa cr chrysalis the latter is a decidedly yellowish-green and from this passes to a brownish-yellow and then a yellowish-brown, the latter color deepening as the time of emerging of the butterfly approaches. It is during this chrysalis stage that the attacks of the parasite *Trogus epssorius*. Brulle. It is an insect of a tawny-red or red-brown color.

My caterpillars were collected from their breeding grounds on the caraway and confined in a small wood box, over the top of which mosquito bar was fastened. They were kept supplied with fresh leaves and the box kept in a cool, moist place, until the inmates established themselves on the sides in this second stage of development. The box was then removed to a position just outside my chamber window, on a tin roof, north side of the house and out of the sun.

Also the precaution of keeping the mosquito bar over a hole some half inch in diameter in one side of the box was no longer considered necessary. Alas! And yet perhaps no reason, for where I lost two specimens I gained two more and a new observation which was just as fresh and delightful as though I had made a discovery new to the scientific world.

My first specimen duly came forth and developed and was put to death and illustrated and finally added to my collection, but my other two specimens were more tardy and thereby forfeited such a distinguished fate. Now who would have thought that the nature of *T. epssorius* should be so ruthless and relentless as to pursue his victim even into the poor creature's prison and there forever bar the possibility those *asterias* from posing before the world as aught but empty chrysalis shells? But such was the case. One morn an inspection of my box proved that two new lives had forced themselves into it through that small hole and the premature gaping hole in the side of the chrysalis told the tale of how the other lives had escaped without the aid of their "wings of flame."

The papilio (*P. asterias*) is not as a general thing a "high-flyer" being found most commonly in the vicinity of the plants on which the larva feed but roaming the fields to some extent and found occasionally in almost all kinds of situations.

A case of hermaphroditism in this species is recorded in the Proceedings of the Philadelphia Entomological Society (Vol. IV, p. 380) as follows:

"A specimen of *Papilio asterias* is in my collection, and was captured by Mr. J. Megers of Brooklyn, L. I., two or three years since. It is a fine instance of a perfect hermaphrodite. The right wings are both male, the left wings both female, distinctly marked upon both surfaces with no suffusion of color. The size is that of the largest specimen of *Asterias*."

Mr. Saunders submitted to Mr. Packard a specimen from St. Johns, Newfoundland, which he considered a new species and named *Papilio brevicanda*, saunders. Mr. Packard, however, is inclined to regard it as a remarkable variety of *Asterias*. Mr. Saunders thus describes the points of difference:

"In *P. asterias* the palpi are edged within with yellow; in *P. brevicauda* they are black; *P. asterias* has two yellow spots above at the base of the antennæ, which are

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* NOTE I have had free access to "Packard's Manual,"—that valuable manual of the entomologist—to supplement my knowledge, memory and notes in the preparation of this article and to that authority I wish to give due credit. My thanks are also due to Mr. Beutenmuller, entomologist of the American Museum. for kindnesses shown me while preparing these notes. B. S. B.

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either wanting or exceedingly faint in *P. brevicauda*. *P. asterias* has a spot of bright yellow on the anterior edge of the throax. *P. brevicauda* has a fringe of duller yellow extending fully half the length of the thorax. On the primaries the discal bar in *P. asterias* is much narrower, and the row of spots smaller and brighter yellow, the upper one in the row being divided; in *P. brevicauda* the spots are fulvous, the upper one is undivided. The inner row of spots are also entirely yellow in *P. asterias*, smaller and very different in form from those on *P. brevicauda*. The second row of spots is also smaller in *P. asterias* and the red spot at the anal angle paler with a small black spot in it, and a wider crescent of bluish atons above. The length of the tail, which is one of the most striking points of difference, has already been noticed."

Packard himself says: "We have compared some interesting specimens of *P. asterias* in the Boston Museum of Natural History, collected about Boston by Mr. Shurtleff, which approach (in the reddish hue of the spots, usually yellow, especially on the under side, and in the shortness of the tail) the Newfoundland specimen kindly sent us by Mr. Saunders, and strongly suggest the inference, with which Messrs. Scudder and Sanborn agree, that *P. brevicauda* is a very remarkable local variety of *P. asterias*."

Hoping that we shall hear more of the life histories of our common insects has been the spirit of this endeavor.

B. S. BOWDISH,
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A correspondent of the *Popular Science News* tells how he harnessed a katydid to a kind of sled made by folding a piece of ordinary note paper, and then loaded the sled with various articles. The insect proved able to draw in addition to the original paper, twelve paper sheets each three by four and one-half inches, a large screw, two steel pens, a stone weighing two ounces and three and a half lead pencils. When the weight became too heavy to be drawn otherwise the katydid got its forefeet over the edge of the table for a better hold and on the addition of another weight it increased the adhering power of its feet by moistening them in its mouth.

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343. BROAD-WINGED HAWK. *Buteo latissimus.* Summer resident and breeds. Not nearly as common as *borealis* and *lineatus*.

347a. AMERICAN ROUGH-LEGGED HAWK. *Archibuteo lagopus sancti-johnannis.* Common winter and spring visitor. Most common in Monroe Co. in March and April.

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356. DUCK HAWK. *Falco peregrinus anatum.* Rare in fall and winter.

357. PIGEON HAWK. *Falco columbarius.* Common migrant. Reported by L. V. Case as having nested near Naples, Ontario Co. Certainly a rare breeder.

360. AMERICAN SPARROW HAWK. *Falco sparverius.* Common summer resident and breeds.

364. AMERICAN OSPREY. *Pandion haliaetus carolinensis.* Common migrant. Especially on the lake.

Family BUBONIDÆ.—Horned Owls, etc.

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367. SHORT-EARED OWL. *Asio accipitrinus.* Common fall and winter visitant and possible rare breeder.

368. BARRED OWL. *Syrnium nebulosum.* Rare visitor. Reported from Orleans and Niagara Co's.

372. SAW-WHET OWL. *Nyctala acadica.* Common fall visitor and rare resident. Breeds.

373. SCREECH OWL. *Megascops asio.* Common resident and breeds.

375. GREAT HORNED OWL. *Bubo virginianus.* Common resident and breeds.

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If you want the potatoes and prefer to exchange eggs in sets or other specimens, or any of the books, as per my list of wants in NATURAL SCIENCE NEWS of Feb. 28th, write me, I think we can arrange a "swap."

One of the largest potato growers of Western N. Y. speaks of the "King of the Roses" as follows: "We thoroughly tested this new seedling on many different soils, and found it to withstand sudden wide changes of weather, excessive moisture and extreme drouth, remarkably well. It produces much heavier crops of fine, large, handsome tubers of excellent quality, than any other of the true Rose family, ripening with Early Rose. It is a strong, rapid grower, standing up well during season of cultivation and when fully developed the vines cover the ground almost completely, and so protect it from the hot sun. Tubers large, oval-oblong, light pink like Early Rose."

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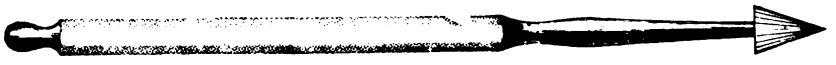

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The Early Discovery of Coal.

Bituminous coal, or sea coal, was known upwards of a thousand years ago, in the year 853, but did not come into general use until the 16th century, and was not used in the manufacture of iron until the 17th century. Anthracite coal came gradually into use so late as the 19th century, and was not used as fuel fn the manufacture of iron until about 36 years ago.

So early as 1790 anthracite coal was known to abound in the county of Schuylkill, in the State of Pennsylvania; but it being of a different quality from that known as sea coal or bituminous coal, and being hard of ignition, it was deemed useless until the year 1795 when a Pennsylvania blacksmith, named Whetstone, brought it into notice. His success in burning it induced persons to dig for it: but when found, every person connected with the enterprise had to experiment on its combustion, and vain were the attempts to burn it by the majority of them, and all came to the conclusion that it would not come into general use.

About the year 1800, Mr. Morris, who had a large tract of land in Schuylkill county, Pennsylvania, procured a quantity of coal therefrom, and took it to Philadelphia city, but he was unable with all his heroic exertions to bring it into notice, and abandoned all his plans. From that time until 1806 it was talked about as a humbug; when accidently a bed of coal was found in digging a tail race for a water wheel for a forge, which induced another blacksmith, David Berlin, to make a trial of it. His success was generally made known, which induced others to try to burn Pensylvania coal.—*Scientific American.*

BIRDS OF WESTERN NEW YORK.

ERNEST H. SHORT.

376. SNOWY OWL. *Nyctea nyctea.* Occasional winter visitor.

377a. AMERICAN HAWK OWL. *Surnia ulula caparoch.* Occasional winter visitant. L. V. Case reports two from Naples, Ontario Co. Also mentioned by G. F. Guelf of Brockport.

Order COCCYGES. Cuckoos, etc.

Family CUCULIDÆ.—Cuckoos.

387. YELLOW-BILLED CUCKOO. *Coccyzus americanus.* Summer resident and breeds.

388. BLACK-BILLED CUCKOO. *Coccyzus erythrophthalmus.* Common summer resident and breeds.

Family ALCEDINIDÆ.—Kingfishers.

390. BELTED KINGFISHER. *Ceryle alcyon.* Common summer resident and breeds.

Order PICI. Woodpeckers.

Family PICIDÆ.—Woodpeckers.

393. HAIRY WOODPECKER.. *Dryobates villsosus.* Resident and breeds. Not as common as next.

394. DOWNY WOODPECKER. *Dryobates pubescens.* Common resident and breeds.

402. YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius.* Regular migrant though not common. A rare breeder. A nest containing four young found in Medina by Harry A. Chase.

405. PILEATED WOODPECKER. *Ceophlœus pileatus.* Rare resident and breeder. Seems to be confined to the wildest parts of the southern tier of counties.

406. RED-HEADED WOODPECKER. *Melanerpes erythrocephalus.* Common summer resident and breeder.

409. RED-BELLIED WOODPECKER. *Melanerpes carolinus.* Regular visitor in small numbers. Most common in December.

412. FLICKER. *Colaptes auratus.* Common summer resident and breeds. Occasional winter resident.

Order MACROCHIRES. Goatsuckers, Swifts and Hummers.

Family CAPRIMULGIDÆ. - Goatsuckers.

417. WHIP-POOR-WILL. *Antrostomus vociferus.* Rare summer resident and breeds.

420. NIGHTHAWK. *Chordeiles virginianus.* Summer resident and breeder.

Family MICROPODIDÆ.—Swifts.

423. CHIMNEY SWIFT. *Chætura pelagica.* Common summer resident and breeder.

Family TROCHILIDÆ.—Hummingbirds.

428. RUBY-THROATED HUMMINGBIRD. *Trochilus colubris.* Common summer resident and breeder.

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Amount of Volcanic Dust.

In a paper presented in Philadelphia a month or two ago, Prof. N. S. Shaler called attention to the importance of volcanic dust as a geologic agent. Basing some conclusions of the great volcanic activity in recent years in the Island of Java and the district near by, Professor Shaler thinks that the vocanic dust which settles on the ocean is perhaps quite equal in amount to all the soil that is carried down by the rivers. It may even be equal he thinks to the whole amount of rock material which falls into the sea from all causes, put together, includlng the true dust of the land which is blown in by the wind. If either one of these suppositions be true, and it is not likely that Professor Shaler has made up his mind without good reasons for doing so, it is evident that the relation of volcanic dust to the formation of land has by no means been appreciated. The supposition finds supporting evidence in the fact that pumice-stone deposits are noticeable along the coasts of our own country.—*Happy Thought.*

In the Chemical Laboratory.

Professor—"What has become of Tom Appleton? Wasn't he studying with the class last year?"

"Ah, yes; Appleton—poor fellow: A fine student, but absent minded in the use of chemicals—very. That discoloration on the ceiling—notice it?"

"Yes."

"That's Appleton."—*Pearson's Weekly.*

A Venezuelan Exhibit.

One of the latest additions to the Philadelphia Museum is the Venezuelan exhibit from the Atlanta Exposition, which comes as a gift from the Venezuelan Government, and which illustrates by a collection of 3,000 objects the researches of her forests, mines, and fields. Such an exhibit will prove very valuable to our manufacturers and merchants; and it would well repay the statesmen at Washington for the time and trouble expended in looking over the collection.—*Philadelphia Record.*

683. YELLOW-BREASTED CHAT. *Icteria virens.* Rare summer resident. On May 26, 1890, I found a nest at Chili, (see *Oologist*, Sept., 1892) containing one egg. Think they are very rare in this latitude.

684. HOODED WARBLER. *Sylvania mitrata.* Summer resident. Breeds.

685. WILSON'S WARBLER. *Sylvania pusilla.* Reported by Mr. Davison as a rare migrant. Must be very rare.

686. CANADIAN WARBLER. *Sylvania canadensis.* Migrant and possible summer resident.

687. AMERICAN REDSTART. *Setophaga ruticilla.* Abundant summer resident in suitable localities. Breeds.

Family MOTACILLIDÆ.—Pipits, etc.

697, AMERICAN PIPIT. *Anthus pensylvanicus.* Irregular fall visitor.

Family TROGLODYTIDÆ.—Thrashers and Wrens.

703. MOCKINGBIRD. *Mimus polyglottus.* Rare visitor and possible breeder. Reported by L. V. Case of Naples.

704. CATBIRD. *Galeoscoptes carolinensis.* Abundant summer resident and breeds.

705. BROWN THRASHER. *Harporhynchus rufus.* Rare summer resident, becoming more common in the southern counties. Breeds.

718. CAROLINA WREN. *Thryothorus ludovicianus.* One taken four miles north of Batavia, Genesee Co., about Dec. 22, 1894, by Alfred Garrett of Gaines, Orleans Co. Very rare straggler.

721. HOUSE WREN. *Troglodytes ædon.* Summer resident. Breeds.

722. WINTER WREN. *Troglodytes hiemalis.* Migrant. Not very common.

724. SHORT-BILLED MARSH WREN. *Cistothorus stelluris.* Summer resident and breeds. Local on the lake.

725. LONG-BILLED MARSH WREN. *Cistothorus palustris.* Common summer resident on the lake shore. Breeds.

Family CERTHIDÆ.—Creepers.

726. BROWN CREEPER. *Certhia familiaris americana.* Common migrant and often seen in winter.

Family PARIDÆ.—Nuthatches and Tits.

727. WHITE-BREASTED NUTHATCH. *Sitta carolinensis.* Resident. Everywhere common. Breeds.

728. RED-BREASTED NUTHATCH. *Sitta canadensis.* Occasional winter visitant.

735. CHICKADEE. *Parus atricapillus.* Common resident and breeds.

Family SYLVIIDÆ.—Kinglets and Gnatcatchers.

748. GOLDEN-CROWNED KINGLET. *Regulus satrapa.* Common migrant. Said to winter here.

749. RUBY-CROWNED KINGLET. *Regulus calendula.* Common migrant.

751. BLUE-GRAY GNATCATCHER. *Polioptila cærulea.* Very rare summer resident. Know of only one instance of its breeding. A pair reared their young near Coldwater, Monroe Co., during the summer of 1890.

Family TURDIDÆ.—Thrushes, Bluebirds, etc.

755. WOOD THRUSH. *Turdus mustelinus.* Common summer resident. Breeds.

756. WILSON'S THRUSH. *Turdus fuscescens.* Common summer resident. Breeds.

757. GRAY-CHEEKED THRUSH. *Turdus alicie.* Mr. Davison in his list in *Forest and Stream*, Sept., 1889, reported it as an uncommon migrant. I have never taken the species.

758a. OLIVE-BACKED THRUSH. *Turdus ustulatus swainsonii.* Occasional migrant and very rare breeder. Reported by F. H. Lattin as nesting at Gaines, Orleans Co., during the summers of 1880-81.

759b. HERMIT THRUSH. *Turdus aonalaschkæ pallasii.* Common migrant and rare breeder. Have found nests at Chili during 1889-90-92-93. Also reported by L. V. Case as a rare migrant at Naples, Ontario Co.

761. AMERICAN ROBIN. *Merula migratoria.* Abundant summer resident. Breeds.

766. BLUEBIRD. *Sialia sialis.* Abundant summer resident. Breeds.

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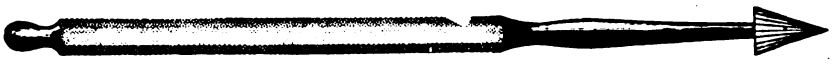

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